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# PROGRESSIVE MEDICINE

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES  
AND IMPROVEMENTS

IN THE  
MEDICAL AND SURGICAL SCIENCES

EDITED BY  
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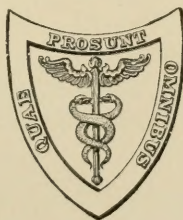
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VOLUME III. SEPTEMBER, 1915

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS  
AND BLOODVESSELS—DERMATOLOGY AND SYPHILIS—OBSTETRICS—  
DISEASES OF THE NERVOUS SYSTEM



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# PROGRESSIVE MEDICINE.

SEPTEMBER, 1915.

## DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

By WILLIAM EWART, M.D., F.R.C.P.

**The War. Experimentum Belli.** "The XXth Century Continental War" has opened a new page in the annals of medical science as well as of humanity. Thought fails at the vastness of this titanic experiment. Nature convulsed by man for his mutual destruction, where the human frame in its highest perfection is the *corpus vile*. Physiologists might learn the limits of its endurance under almost every form of attack upon its vitality, by structural mutilation, congelation, combustion, and by the extremities of strain imposed upon almost all its functions, not least upon the cerebral. For all that it contains of teaching, that appalling experimentation in live animal torture applied to the most delicate and sensitive of all animal organisms is in vain, for want of scientific observers, and for the awful rapidity of the holocaust. The gain to science is relatively minimal, and it is practically limited to surgery and medicine.

Of that small return for an appalling cost, by far the greatest share accrues to operative surgery and its practical methods. Their records, as far as any recording is possible under terrible urgencies, will bulk largest in the vital annals of the German scourge, as previously of the Napoleonic, under Larrey. The greatest contrast between those two histories will be the reversal of the proportion between slaughter by weapons, and slaughter by disease. The mind staggers at thinking what "might have been," had not Pasteur and medicine seen to it that that proportion was reversed.

In medicine, as in surgery, the scope has been chiefly experimental; a double test applied to the endurance of the vital powers, and to the efficacy of our methods in prevention and in treatment. The unexampled conditions, the superhuman destructive machinery of warfare,

and the unprecedented variety of novel circumstances, local and seasonal, in that huge campaign in three continents, have already brought into special prominence, and under immediate discussion in our current medical literature, some definite questions, which will claim separate notice in their respective departments of medical review. Among them might be enumerated, as bearing more closely upon the respiratory and the circulatory systems, the questions of fitness for service and of endurance, of fatigue and of sleep, of frostbite, of the supply of alcohol and of medicinal stimulants to combatants, etc., some of which will be referred to under their appropriate headings.

### PULMONARY TUBERCULOSIS.

**Phthisis and Soldiering.** The most striking contribution to phthisiology during the past year, perhaps the greatest of its teachings, has arisen out of the war. It is the confirmation and the late development of a great principle, originated in England long ago by Bodington. After its long-delayed revival, it had been discredited for a while by reckless overdoing among the British invalid colony in Davos. But it was finally placed upon safe and successful working lines by Paterson at Frimley. That principle is that the convalescence from phthisis is not by rest and feeding alone, but by gradual muscular reëducation—a cardiopulmonary convalescence.

If such is the best for a late convalescence, might not that mechanism be our guide to the best mechanism for an early recovery? The two mechanisms cannot be antipodal, for there is no intervening distance between the onset of recovery and the following convalescence. Neither indeed is there any break between the process of illness and that of recovery. Illness is but our name for nature's own plan for recovery. Where definite "antagonism" comes in is only between the *ens morbi* and her efforts to overcome it.

Nature's method, in spite of all her great difficulties and failures, ought to contain some suggestions for us. The bacillus paralyzes the lung locally before it destroys it. Nature attacks the bacillus by "working" the lung. Cough, which we are pleased to call "a symptom," is much more a method. We have learned not to suppress it by any devitalizing drugs; while owning that the strain of cough may—in some measure it probably does—"auto-inoculate" the patient, we approve it as a beneficent necessity which controls a greater evil, the fatal toxic pyrexia from festering retentions.

Nature discriminates between the open lesion and the closed; yet for both of them she "works" the lung. The main difference is in her modes of exercising it for the "open" case, by cough; for the "closed," by ambulant and avocational work. In the first, she attacks the lesion itself by powerful, though too often ineffectual, lateral pressures to

endeavor to squeeze it empty. In the second, there is no such direct attack. She attends merely to the great cardio-pulmonary cure, namely, by an even increase (proportionate to the extent of the loss of tissue by incarceration) in the general pulmonary expansion required for a continuation of the work-a-day life of the unsuspecting sufferer; though in many instances the stress of a symptomatic dry cough may be superadded.

**THE PHTHISICAL SOLDIER AT THE FRONT.** The facts which have occasioned these remarks have been given prominence by Sir Thomas Oliver<sup>1</sup> in connection with the case of a soldier, aged twenty-six years, originally a coal miner, recently invalided from Mons and the Aisne, where he had served with efficiency and fitness in the transport corps under highly strenuous circumstances, until he developed extensive pulmonary catarrh from continued exposure to wet and cold. Since his initial pleurisy five years ago, followed by tubercular symptoms for which he spent six months in a sanatorium, he had worked for twelve months as a laborer, but broke down under the heavier work of a plater's helper in a Tyneside shipyard, and had remained under treatment at the Newcastle tuberculosis dispensary until passed as fit for active service with the R. A. M. C., on August 5. He had previously had hemoptysis, but at the front had good health and felt perfectly well. On his return, the condition on examination was: The upper half of the left chest dull, with numerous small crackling rales and signs of excavation. The right lung almost normal; no displacement of the heart.

The Leeds Sanatorium, opened in September, 1913, can boast, as reported by its medical officer, N. Gebbie,<sup>2</sup> of having contributed from its list of old patients no fewer than 47 enlistments. Eight of the men have done well at the front—the others, at home, under strenuous training—in the auxiliary services, engineers, marines, and several infantry regiments; one has been killed in action. One of the three men treated by pneumothorax reports himself well and equal to his fellows save at the “double” round the parade ground.

Another striking instance is that of a gentleman whom I sent to Davos winter before last, though without any benefit, for persistent tubercular catarrh with slight signs at the left apex, and an old lesion of the right upper front with retraction. The catarrh having subsided last summer after three months of treatment by my present method, in August I was able to warrant his accepting an officer's commission on a yacht for mine-sweeping off the east coast of Scotland. He has stood the hardships of that duty continuously during a bitterly inclement autumn and winter, in perfect health, and without any pulmonary damage discoverable on recent examination.

<sup>1</sup> British Medical Journal, February 27, 1915.

<sup>2</sup> Ibid., March 13, 1915.



The presence of tuberculous soldiers at the front is not limited to the British lines. M. E. Rist<sup>1</sup> instances the case of a French soldier, the subject of profuse and recurrent hemoptysis, of elevated temperature, and of progressive emaciation, who for a whole year had received an insufflation of nitrogen every fifteen days. This man was able not only to undergo the fatiguing operations of mobilization, but to finish a number of forced marches, and to take part in at least one battle. When, ultimately overtaxed, he returned to the hospital, the pneumothorax was found still with a positive pressure of 3 cm. of water. Half a litre of serous fluid was withdrawn before proceeding to re-insufflate nitrogen. The patient remains in robust health, without fever, cough, or expectoration.

Oliver believes that similar instances are just as numerous, if not more so, among the Germans. In the *Times* (February 13), "Eye-Witness" reports that a dead German was found having two medical certificates in his pocket stating that he was suffering from consumption and an application from the father that his son should not be sent on active service as he was suffering from lung trouble. He concludes that this ability to endure speaks well for the present treatment of pulmonary tuberculosis by sanatorium and open-air, and of suitable cases by artificial pneumothorax.

There is obviously another side to the question. L. Crossley<sup>2</sup> objects in strong terms to the grave risks inflicted upon the healthy by the close contubernium in barracks, camp, or trenches. Both in the army and navy the rule in peace times is to discharge a tuberculous individual as soon as it is diagnosed; the rule should be yet more rigorously enforced in war time. Sooner or later most of the cases must break down under the excessive strain of warfare, such as the present war. He gives instances in point.

J. D. Macfie cannot understand how bearers of marked physical signs were accepted, and states that if the question of their service had been left to the local tuberculosis officers, few, if any, phthisical patients would have been allowed on active service. Their presence there will have caused the country needless expense, and loss of valuable time to the over-worked medical officers.

For the large average, an outdoor occupation not involving strenuous exertion is the optimum. As insisted upon by Sir Hermann Weber, it is not prudent to lay down fixed rules irrespective of individual conditions and circumstances, both general and local.

**I. Etiology.** "TUBERCULOSIS IS NOT DIRECTLY INHERITABLE" is the conclusion drawn by Péhu and Chalié<sup>3</sup> from their extensive study of recent literature. The offspring of the tuberculous is merely a more

<sup>1</sup> *Preses Méd.*, November 19, 1914.

<sup>2</sup> *British Medical Journal*, March 27, 1915.

<sup>3</sup> *Arch. d. Méd. des Enfants*, January, 1915.

receptive soil for *any* disease. Transmission through the placenta is so rare as to be negligible. On the main question as to the *inheritance of acquired properties*, V. Franz's<sup>1</sup> ten years' experimental research establishes that some properties are undoubtedly transmissible, on the plan that the obvious "adaptive variation," or, rather, the "acquired adaptation" of individual living matter to its environment is visibly transmitted through generations. In *cancer*, this view has recently received remarkable confirmation from Maud Slye's<sup>2</sup> research. She has bred cancer through ten generations of mice; and, in 10,000 mice under her present observation, spontaneous cancer is constantly occurring—almost invariably in the "cancerous strains." "Cancer is hybridized as inevitably as an albino mouse carries albinism into a pigmented strain with which it is hybridized, and with exactly parallel behavior of the character," and cancer, as such, is not then transmitted, but only the tendency of the cells to produce it under suitable conditions of local irritation. The practical teaching thereby established is that "The utmost elimination of all forms of over-irritation to the tissues of an individual of high cancer ancestry should go far to eliminate the provocation of cancer; and the eugenic control of matings, so that cancer shall at least not be potential on both sides of the hybrid cross, ought to eventuate in a considerable decrease in the frequency of human cancer."

DRY TUBERCULOUS DUST is, according to Chaussé's<sup>3</sup> experimental research, the main vehicle of infection. He altogether discards Flugge's "tuberculous spray." Sputum dried on a handkerchief is still virulent after ten days. But bacilli, after drying and a few days' exposure to light, lose their virulence even when still surviving. Hence, as confirmed by his experiment, the dusty air of public places is rarely infectious. Looking far back, the mistaken conclusion that phthisis was non-infective, held by the Brompton Staff when the reviewer was member of it, just before Koch's pronouncements to the contrary, is explained and excused. It was based upon the negative results of the late C. Theodore Williams' experiment of keeping guinea-pigs in the extracting flue from the wards. Chaussé allots an altogether secondary importance to hereditary tendency.

PRE-LESIONAL BACILLEMIA. A Jousset,<sup>4</sup> guided by that which is observed in guinea-pigs after inoculation, found a surprising proportion of positive results in his serial examination of the blood of infants up to three months of age in spite of the absence of any suspicious appearances; while the tuberculin tests had been almost always negative. In most of them the clinical picture had been that of athrepsia

<sup>1</sup> Med. Klin., March, 1915.

<sup>2</sup> Journal of Medical Research, 1915, p. 159.

<sup>3</sup> Ann. Inst. Pasteur, 1914, xxviii.

<sup>4</sup> Bull. Ac. de Méd., February 9, 1915.

with diarrhea. As the tubercle bacillus is not saprophytic, this amounts to a toxic pre-tubercular bacillemia. On the other hand, a simultaneous communication from E. Rumpf and J. Zeissler<sup>1</sup> is devoted to a clinical and experimental proving that the bodies so often described as tubercle bacillus from the sediment of human blood, are frequently misleading semblances.

A SUCCESSFUL "POSTMORTEM BLOOD CULTURE" OF THE BACILLUS was obtained by H. K. Faber<sup>2</sup> from a subject who died of miliary tuberculosis. He states that all recorded previous attempts had been unsuccessful.

TUBERCULOSIS IN SCHOOL CHILDREN. The Board of Education's Sixth Annual Medical Report mentions that the mortality from tuberculosis among children and young people, which is highest in towns, continues to decrease. In early childhood the lymphatic tissue, the bones, and the joints are more often invaded. Although infection of the lungs appears to increase with age, it comparatively seldom resembles the pulmonary tuberculosis of adults. If recognized early and suitably treated, it is more amenable. A small outlay in preventive and medical measures could effect a large reduction of the late incidence. Prevention is needed whether there be tubercle or not; also good food, and the cure of throat and nose diseases and chronic bronchitis. Keeping the feet dry would diminish colds and bronchitis, and therefore, indirectly, tuberculosis. The exclusion of early pulmonary tuberculosis from school is deprecated. Such children are seldom, if ever, dangerous to others. Unless considered actually infectious, they are usually far better off at school, under reasonably good conditions and discipline, than at home.

**II. Early Diagnosis of Pulmonary Tuberculosis.** E. Stern<sup>3</sup> adds to the well-known symptoms, a "larynx sign" and an "iris sign," both observable on the side affected. The vocal cord is slightly "lame," with an irregular margin, and with more phlegm. The iris is slightly "dilated," and "slow." These are analogous changes to the "lagging" thoracic excursion. He believes that they are all largely due to pressure on nerves by enlarged lymphatic glands.

For SUCCESSFUL AUSCULTATION, Biefeld recommends the "whispering" method. This undoubtedly presents many advantages.

PERCUSSION. David Lees<sup>4</sup> believes in *digital percussion* (in firm dorsal recumbency, for the front; on the contrary, in the sitting posture for the back), as competent to diagnose readily and reliably *chronic pulmonary tuberculosis* at its early stage in infancy and childhood. His method (previously described for diagnosis in adults) is by the detec-

<sup>1</sup> Deutsch. med. Woch., February 11, 1915.

<sup>2</sup> Journal of American Medical Association, November 7, 1914.

<sup>3</sup> Berl. klin. Woch., July 27, 1914.

<sup>4</sup> British Medical Journal, September 12, 1914; cf. Pract., March, 1915.



tion of "multiple dull areas," which in his diagram are distributed *larga manu* and symmetrically over the upper regions front and back and also over the mid-dorsal regions. These suffice to establish his diagnosis "even in the entire absence of morbid sounds (except defective air-entry), and of cough, sputum, or obvious pyrexia." Clive Riviere<sup>1</sup> is also convinced of their reality; but at the same time of their frequent presence and permanence in many healthy people. He has indeed detected them in "every chest examined from that point of view." He cannot regard their mere presence as any evidence of clinical disease. This appears to us to imply that they would be "anatomical;" if so, it were most important that they should be unquestionably substantiated, strictly localized topographically, and "proved" to be anatomical. Our difficulty is, therefore, very great in following Lees, either in his belief in them, as "characteristic" and of diagnostic value, or in his argument in support, which is based not upon post-mortem evidence, but upon that of complete recovery. That difficulty is intensified by his statement that they are "not" of the nature of atelectasis, and by his complete reticence as to "what" they are, and as to what connection, if any, they bear to any local tubercular or other lesions. Our acceptance of the diagnosis from them, and of the therapeutic conclusions based thereon, is therefore contingent upon further evidence of a crucial order.

Clive Riviere's important paper, contributed to the same discussion on "Chronic Pulmonary Tuberculosis in Childhood," dwells largely upon the diagnosis between "phthisis" and tuberculosis of the *tracheo-bronchial glands*. This is illustrated by outlined topographical dullnesses, which, from their unusually large size, must have been intended as purely diagrammatic.

**III. The Treatment of Pulmonary Tuberculosis.** *In the complete "Outline of our present treatment"* given in the serial articles<sup>2</sup> on "The Tuberculosis Problem" only a few points need be mentioned. There is "no specific cure." The important treatment is "hygiene." (1) *Climatically*, there is no "Mecca," curative, or even suitable for all cases. For many, "home," is the only abode of "comfort." For others, too deficient in stability, the sanatorium is an "indispensable." The bacillus thrives best in cold, damp climates, and next best in hot, damp climates. Winds make a bad climate worse, and perhaps a good climate better. Therefore, for patients not seriously ill, a sea voyage is often excellent. The high altitude is not suitable for all. The value of the *pine regions* has also, perhaps, been overestimated. A rough working rule is that if both apices present softening and cavities, or much infiltration, a change of climate can hardly give but slight relief. (2) *Fresh-air treatment* does not mean that the patient should be frozen to

<sup>1</sup> British Medical Journal; *ibid*.

<sup>2</sup> Journal of American Medical Association, April 4, 1914.

death in winter; or lie out on a veranda in a fog. Foolish exposure of babies to cold is a potent cause of the increase in postnasal adenoids. (3) *Rest*. When fever rises in the afternoon and evening, the patient should be kept absolutely at rest. If the physician is in doubt, it is best to err on the side of rest. (3a) "*When should exercise begin?*" can only be decided by testing the patient in walking, calisthenics, or light work (and all must be graded). A patient under cure for the lungs should not have deep breathing exercises. A patient under tuberculin should not exercise on the days of the injections. (4) *Food*. Increase

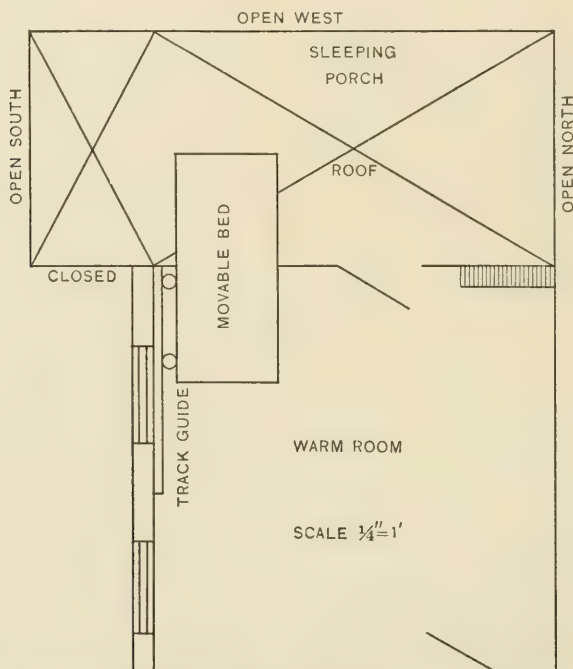


FIG. 1.—Ideal sleeping porch. When the bed is fully extended on the porch, the foot board closes the room from the outside air; when bed is in warm room, head board closes opening to sleeping porch.

in weight is not always a good indicator. "Hyperalimentation" by forcing food down is a mistake.

1. THE HYGIENIC TREATMENT. *Two present-day fads* are inveighed against by A. M. MacWhinnie:<sup>1</sup> The cold plunge bath, because of its overstimulation and excessive expenditure of energy; and, with undoubted warrant, "the cold and damp bed" in which the open-air consumptive is made to lie. We air our sheets before the fire, but *his* bed awaits him cold and damp during inclement weather, from perpetual exposure in an unsuitable sleeping porch. An ideal porch is depicted,

<sup>1</sup> New York Medical Journal, April 18, 1914.

with a way through the wall in and out of a warm room. There is common sense in it.

On the other hand, Burt F. Howard,<sup>1</sup> who believes in hydrotherapy, holds that cold is indicated as a neuro-vascular and general tonic in tuberculosis; that it may be used in some form in all stages; and that early cases should be given the benefit of the therapeutic use of cold water or cold air, or both.

*Abdominal Therapeutics in Phthisis.* In our routine treatment much has been done to weaken, nothing to strengthen, the abdominal functions and above all that of the stomach. Tecon,<sup>2</sup> duly impressed by that fact, has had excellent results from systematic abdominal exercises. That which he recommends is useful, but might be improved upon. But the whole question would take more space to discuss than is here available. A hint, however, arises from E. Aron's note<sup>3</sup> on "Artificial Respiration." His experiments on rabbits make him suspect that, in man also, exerting expiratory pressure upon the abdomen would be more effectual than compressing the ribs. If so, we possess a simple form of abdominal exercise always available, and always helpful in its action, both above and below the diaphragm.

2. THE DRUG TREATMENT, in contrast with "Open-air," Bacillotherapy, and Surgery, does not seem to have received any recent innovations. Minchin, of Dublin, continues his advocacy (*cf.* his book) of garlic and of allyl sulphide as internal disinfectants for "shut-away septic fluids." Larrieu, of Paris, is an almost solitary believer in an exclusive and systematic "drug treatment," namely, by varied injections including strychnine, cacodylate, guaiacol, eucalyptol, camphor, iodoform, etc.; and by potassium iodide and bromide with tonics internally (*cf.* M. Press, etc., April 22, 1914).

*Oxy-pinene*, which is obtained from the vapor of oil of turpentine in dry ozonized air under high tension electric discharge, is stated by B. H. Waters, who has published his experimental observations in the *Medical Record* (Feb. 13, 1915), to be of advantage as an inhalation, less perhaps owing to any direct germicidal action upon tubercle bacilli *in situ* (though it seems to be able to destroy them in sputum), than owing to it inhibiting the growth of some of the other infective organisms, and to its promoting phagocytosis through stimulating the local circulation like turpentine without producing irritation. He also regards it as a valuable expectorant and as a help to nutrition by stimulating the appetite and digestion.

*Hemoptysis* has been successfully treated by various observers with hypodermic injections of *emetine*. The general hemostatic value of the latter is attested by J. Weinstein.<sup>4</sup> A dose of  $\frac{1}{2}$  grain of the hydrochloride

<sup>1</sup> Journal of American Medical Association, March 27, 1915.

<sup>2</sup> Rev. Med. S. Rom., January, 1915.    <sup>3</sup> Berlin. klin. Woch., February 8, 1915.

<sup>4</sup> Medical Record, January 16, 1915.



is efficient against hemorrhage in throat and nose operations. Chauffard<sup>1</sup> shares that good opinion. He trusts to the injection for hemoptysis, whether due to tubercle, congestion, or perforating amebic liver abscess. But B. Nicola,<sup>2</sup> from his reasoned experience in 24 cases of tuberculosis, expects good results only in the early and moderate hemorrhages, or in cases of high blood-pressure; but not in passive venous congestions, or in ulcerative lesions with low tension.

*Hypertonic Saline Infusion* has been used by Moczulski<sup>3</sup> in nine cases of hemorrhage from the lungs. J. H. Whelan<sup>4</sup> reports remarkable results, at all stages, from daily *intramuscular* injections of dilute *Liquor Strychninæ* (18 to 25 minim doses of its dilution with saline to a strength of 1 in 400). He thinks that it stimulates the formation of antibodies, particularly when, in suitable cases, tuberculin in addition is injected once a week.

3. BACILLOTHERAPY. *An Answer to Antituberculinists* is given by W. H. Wynn.<sup>5</sup> His searching criticism of Batty Shaw's attack includes the following point: "In all his cases the length of treatment was three months. No proper course of tuberculin can be given in this time." Many of the criticisms apply equally to Dr. Bardswell's report. A fixed scale of dosage was too rigidly followed; doses were increased in spite of reactions and interruptions of treatment. The maximum dose reached in most cases was far too small and the length of treatment too short. No data on the tuberculin treatment are worth giving unless the administration has been skilfully adapted to the needs of each patient, the stronger preparations have been used and large doses reached. Even then the course may have to be partially repeated, perhaps more than once, after an interval of some months. A final judgment can only be arrived at by comparing the condition of treated patients with untreated controls after the lapse of some years. Routine is particularly out of place. No two patients receive the same sequence of doses from an experienced administrator.

*Practical Conclusions as to Tuberculin Treatment* seem to be at last emerging, after a quarter of a century, from the only field which could yield them. That field is neither the bacteriological laboratory, nor the pharmacist's store; nor the individual therapist's case-book, whether in hospital or in general practice; but the "curing-ground," where the human "curables" are collected for the business of working out their cure and the best methods for it. The "King's" sanatorium is royally fulfilling the lofty purpose of its august founder, and of Sir Ernest Cassel its munificent donor, in clearing the way for the long-hampered

<sup>1</sup> Bull. Acad. d. Méd., January 20, 1915.

<sup>2</sup> Gazz. d. Osp., December 17, 1914.

<sup>3</sup> Wien. med. Woch., May 7, 1914.

<sup>4</sup> British Medical Journal, May 16, 1914.

<sup>5</sup> Ibid., January 2, 1915.



advance. All credit is due to Noel D. Bardswell for having planned that obstacle-raising campaign; and for having patiently carried out its Fabian tactics slowly and surely.

Before stating Bardswell's<sup>1</sup> latest utterance on "The value of tuberculin as an addition to sanatorium treatment" we might perhaps be excused for referring, without any critical comments, to a strikingly suggestive paper, of simultaneous publication, by A. Cowan Guthrie<sup>2</sup> on the successful treatment of 22 cases of severe appendicitis "with anticolon bacillus serum and vaccine," merely as a parable, illustrative by contrast of the long vicissitudes in the history of the ever-hoped-for, but ever-elusive, evidence of some property in tuberculin actually curative for severe phthisis.

1. The initial difficulty, as pointed out by Bardswell, in any assessment of tuberculin as a "remedial agent," is that the cases have to be more or less "selected." (2) In early tuberculosis, when free from bacilli in the sputum, the results of treatment are equally favorable "with or without" tuberculin. (3) In the other series (T. B. in sputum), tuberculin did not seem to yield any appreciable effect; except that in 5 per cent. of the cases the bacilli disappeared from the sputum.

On that basis, the following propositions stand out. (a) Tuberculin cannot be described as a "cure;" as its beneficial effects, very slow to mature, are almost imperceptible. (b) Striking results can no longer be expected from it. (c) Material help from it could only be looked for in cases possessing a favorable outlook under any conditions. (d) It is incapable of converting any unfavorable case into a favorable one. The obvious *practical conclusion* is that "tuberculin" cannot be considered a suitable routine remedy for tuberculosis.

Those statements themselves might still be questioned, or possibly attenuated. They could not conceivably be controverted—short of some unexpected essential discovery practically equivalent to a new departure; because the conclusion is in reality independent of the premises. In itself it is a master fact of unimpeachable observation, from which those statements derive their strongest support. *Tuberculin has not proved to be suitable as a routine remedy.*

His warning to avoid reactions because they cannot be controlled and because even slight reactions retard recovery, may have a much wider significance than its terms convey. Are the "non-reactive," the "legitimate," progressive, continuation-doses, truly harmless up to a climax? In other words is that climax, or is it not, an abrupt "turning point" from a beneficial, to a disastrous, therapeutic action? That is the inwardness of the doubt from which the routine administration of tuberculin has not yet cleared itself. Until that question is decided, tuberculin can hardly rank as a scientific remedy. The "marked

<sup>1</sup> Lancet, January 9, 1915.

<sup>2</sup> British Medical Journal, January 9, 1915.

exacerbation," which he associates with the reaction, remains to be proved as "wholly" due to the latter. Above all we should know that it is not, as it might be, a part-result of the previous doses.

The best word he has to say for tuberculin is in relation with diagnosis. "The test" is of the greatest value in positively excluding tuberculosis whenever it fails to give any reaction. But its general or its focal reactions are of no diagnostic value, other than to show that the patient had at some time been infected.

*Bruschettini's Vaccine for Tuberculosis*, the result of ten years' trial with different vaccines and serums, is confidently recommended by him<sup>1</sup> as efficacious and harmless. The material which he uses is the pleural exudate of rabbits, obtained from them some time after an injection of "living bacilli" in uniform suspension in a physiological solution, their pleura having been previously treated with injections inducing a considerable intrapleural leukocytosis. The result is an exudation containing a vast number of leukocytes charged with jelly-stained bacilli and a few free bacilli. From these, after pounding, etc., the vaccine is prepared. Surprising results were obtained; even some extreme cases are reported to have recovered. No bad results occurred for registration.

*Mehnarto's Contra-toxin Serum No. 4*, a preparation of sheep's serum modified by minute added quantities of certain cold-blooded animals' sera which possess bacteriolytic properties, had been favorably reported upon by D. M. Barcroft<sup>2</sup> as the best method at present available, and as simpler, less irksome, and much shorter than tuberculin treatment, while yielding better results. Prof. T. Hewlett and L. Rajchman<sup>3</sup> now publish their investigations (15 cases examined for four consecutive weeks), and also that of W. E. Cooke and W. Johnstone (25 cases examined for ten weeks), on the influence of the injections on the content of opsonins in the blood serum of tuberculous patients. They agree that the influence is genuine and favorable; and the latter observers admit that the opsonic index remains stationary and permanent above the level of the opsonin content before treatment.

"*Tuberculin*" and "*Graduated Labor*." This, the latest note we are able to record, *re* tuberculin, is also practically the most important. E. Taunton<sup>4</sup> (late Sen. Med. Off. R. Nat. Hosp. for Consumption, Ventnor) summarizes, as follows, the results of an official inquiry by the staff into the recorded 300 cases passed through the "working block" from April, 1912 to March 1914. (1) Tuberculin administered to the "selected workers" does not shorten, but lengthens their treatment; (2) it does not increase their ability to work; but delays the improvement in their working ability; it also eventually leads to a smaller gain from a longer course; (3) it is detrimental to their nutrition,

<sup>1</sup> *Rif. Med.*, February 21, 1914.

<sup>2</sup> *British Journal of Tuberculosis*, No. 7, p. 232.

<sup>3</sup> *Lancet*, May 22, 1915.

<sup>4</sup> *Ibid.*, May 15, 1915.

so far as gauged from the weights gained and the rates of gain; (4) the after-results, as regards fitness for their own work, were less favorable in those treated with tuberculin than in the others. Pending further facts in confirmation of these "adverse" conclusions, we may at least safely estimate that "tuberculin" gave no occasion for any "favorable" ones. At the best, it was superfluous.

4. **PHTHISIS SURGERY.** In this review of the whole subject, Lapeyre is not optimistic, though he hopes for some further evolution. The 9 recorded cases of Freund's *chondrotomy for pseudarthrosis* are comparatively too recent for an estimate. Friedrich's *thoracoplasty* has been improved by Wilms' anterior and posterior rib mobilization without removal. *Extrapleural pneumolysis and filling* (with omental fat, fibroma, Beck's paste or paraffin) has been of material benefit in 10 of Tuffier's 16 cases, and in Jessen's 6 cases. It has also been practiced by Wilms and others. *Pneumectomy* has been discarded in spite of MacEwen's success. But *apex resection* is logical and relatively simple: Tuffier, who has cured a patient for seven years (Stretton cured one for six years), is in favor of its renewed consideration. On the whole, collapse therapy holds the field; but its results are not too good. Transcostal injections, and pneumotomy for drainage have both been abandoned.

*Extrapleural Thoracoplastics.* Zinn and Mühsam<sup>1</sup> report not very enthusiastically of their operations in bronchiectasis or empyema, but had gratifying results in 4 (out of 5) cases of phthisis.

For "*Pneumolysis and Filling, without Resection*," P. Frangenheim<sup>2</sup> empties the cavity by postural gravitation kept up for an hour. The filling substances are none of them hitherto satisfactory. W. Mayer holds that they are unnecessary at first; if required, nitrogen might be injected later. Wilms and Baer find that the filling method is in every way preferable to, and takes more effect upon cavities than, a "thoracoplastic" operation. They advocate its "earlier" use, as they do not find that it aggravates the tuberculosis. Nevertheless, M. Wilms has had favorable results from his dorsal "pillar" resections in 1911-12. Of 23 cases, 4 were clinically cured, 9 nearly cured, 4 merely improved.

*Artificial Pneumothorax.* Our brief remarks will be confined to the general aspects as distinct from the technical.

1. For *pleurisy* a novel use has been found for it by G. Lucas<sup>3</sup> who cured within a week, by three nitrogen injections, a refractory painful pleurisy of long standing. This reminds us that at an earlier date the method had been successfully tried for the relief of severe pain in one or two cases of pleuropulmonary cancer.

*For Dry Pleurisy, a Partial and Temporary Artificial Pneumothorax*, which has been suggested by Lucas, is not a safe proposition, according

<sup>1</sup> Berl. klin. Woch., January 25, 1915.

<sup>2</sup> Med. Klin., August 2, 1914.

<sup>3</sup> British Medical Journal, April 3, 1915.



to C. Lillingstone,<sup>1</sup> in view of the frequency of a tubercular origin. It is now accepted that the success of the treatment in phthisis is dependent upon "completeness" of the inflation and its maintenance "for one or two years or even longer." That time estimate by an expert, which is also adopted by others is, quite apart from Lucas' proposal, a serious indictment of the cure as not practical in point of rapidity.

2. For *phthisis*, H. Vogt<sup>2</sup> states that it is thoroughly suitable in childhood as our most important and reliable resource in severe and progressive cases. He doubts whether tuberculin can be said to be effectual in children, or to have cured any animals. Czerny likewise holds that it does not effect more than can be effected without it. Those views suggest a question which it would be interesting to get answered. Pneumothorax is sufficiently slow a cure to invite any accelerating co-operation; yet literature does not seem to have noted any such appeal to the aid of tuberculin, in spite of the great recuperation in the clinical cases which might have given the discarded remedy a renewed and better chance. Both pneumothorax and phthisis surgery appear not to have promoted tuberculin treatment, but rather to have discouraged it.

Several of the recent papers are reports of personal operative experience extending over several years. These are generally favorable, as, for instance, those of C. Saugman, in Denmark, and of M. Landolt, at the Aarau Sanatorium in Switzerland. Others are mainly critical.

Rénon believes that the treatment prolongs life by retarding the disease. The immediate results may be excellent, but they rarely last long, and cures are exceptional. It is one of the least harmful methods, but destined to disappear when further progress has been made in phthisiotherapy. N. Lapeyre estimates that it is applicable in not more than 3 per cent. of the cases of phthisis; and that, apart from temporary benefit, the cures do not exceed 8 per cent. of the cases operated. Knopf,<sup>3</sup> in his review of the "indications," discountenances its being regarded as a treatment for all stages. It is contra-indicated in early and favorable cases. They should be treated by sanatorium methods.

Lewis S. Mace<sup>4</sup> concludes, from 34 cases operated upon, that the most favorable lungs for pneumothorax are those not yet excavated, though progressing toward softening; that in some advanced cases with large cavities much relief of distress may result from compressing the worse lung; that removal of fluid, with temporary compression by nitrogen gas or air, is the best method of treating large pleuritic effusions; that hemorrhage is usually promptly and permanently relieved; and that compression does not raise the activity of the disease on the opposite side.

<sup>1</sup> British Medical Journal, April 10, 1915.

<sup>2</sup> Ther. d. Geg., June, 1914.

<sup>3</sup> American Journal of Medical Science, March, 1914.

<sup>4</sup> Journal of American Medical Association, March 13, 1915.



Breccia,<sup>1</sup> in his exhaustive review, mentions the fact, the significance of which we have frequently urged, that the other lung is put to extra work, and through increased function, becomes less liable to the aggravation of its lesions.

3. For *bronchiectasis*, opinions are conflicting. Had pneumothorax been in general favor, the list of operative methods given by W. Mayer<sup>2</sup> would have been a shorter one. Mumford and Robinson<sup>3</sup> consider that it should always be tried in the earlier stages. In late cases, lung resection is the only hope of surgical cure, provided the disease is unilateral and the operation not at one stage. A. Wydler<sup>4</sup> also prefers resection to costal excision or pulmonary ligation. His successful case was congenital and bilateral; and therefore not a complete cure.

Pneumothorax in bilateral cases might be applied on both sides in succession. It is recommended by W. Zinn<sup>5</sup> for bronchiectasis on the strength of 3 cases, which it took only two, three, and five months respectively to cure. The suggestion is well worth consideration in spite of the serious obstacle of inveterate pleuropulmonary fibrosis.

**Prevention.** I. "THE PRACTICAL PREVENTION OF TUBERCULOSIS." Mary E. Lapham's<sup>6</sup> views are highly suggestive. As the bacillus is ubiquitous, and nearly all of us its carriers, the worst danger is not its entrance, but arises from within. Public and private "external prophylaxis" have done their best, in vain: Too little is being done to guard against the internal "pathogenic" self-infection. "Our expensive sanatoria havenot reduced onewhit the prevalence of "manifest tuberculosis;" it is rather on the increase." The remedy suggested is a competent yearly examination of every child at school, to detect the "beginnings." Our difficulty, however, is that they cannot be detected; and our suggestion, that the "liability" can be. Practical prevention, as it seems to us, is: *For infants*, clean air and clean milk; *for children*, a yearly or quarterly examination to pass out the great majority, *viz.*, the "normals and non-liables"—and a frequent and searching examination of the "weedy and liable residue." All these should be *assiduously treated* for their individual line of delicacy, which most often is mucous and lymphatic, with special localizations in the upper, and in the bronchial tracts.

II. PROPHYLACTIC MEASURES. A *practical sputum cup* devised by H. E. Symes Thompson<sup>7</sup> is depicted in the *Lancet*. The light and strong wire "holder" cannot be upset and is sterilizable. The "cup" is of waxed paper, and to be renewed daily.

*Prophylaxis by Milk Sterilization* is urged by Lassablière<sup>8</sup> on the only efficient plan; that, popularized by Variot, of an "immediate"

<sup>1</sup> Policl., February 14, 1915.

<sup>2</sup> Annals of Surgery, July, 1914.

<sup>3</sup> Ibid.

<sup>4</sup> Mitt. a. d. Grenz., xviii, i.

<sup>5</sup> Ther. d. Geg., August, 1914.

<sup>6</sup> New York Medical Journal, January 16, 1915.

<sup>7</sup> Lancet, April 17, 1915.

<sup>8</sup> Ac. de Méd., January 27, 1915; British Medical Journal, July 11, 1914.

industrially produced sterilization. Belated sterilization at home cannot completely purify the milk of its bacteria, much less of their toxins. Another important recommendation is that of the alimentary and therapeutic value of condensed milk, which, used exclusively of any other food supply, can rear children of height and weight equal or superior to the normal.

III. SPECIFIC IMMUNIZATION. *New fields for "tuberculin"* are opening up, at the time when its therapeutic promise almost seems to be on the wane, from its recent trials for prevention, so long denied to our hopeful expectation. Nay, the more ambitious attempt has actually been made—is it the "foreshadowing" of some coming reality, or only a "wake dream" in therapeutics?—to "turn on" our bacillus to the treatment of other great troubles. Wagner von Jauregg<sup>1</sup> assures us that, in cases of general paralysis, his addition of tuberculin to the administration of mercury, or of iodides and mercury, is to be credited beyond any question for the resulting remissions (lasting a year or more, and fitting the patients for a resumption of their avocations). These he explains on the principle that acute febrile disorders sometimes arrest psychoses; not by their infective virus, but by the toxic agents thrown off by it.

If prevention should eventually prove to be the most profitable sphere for tuberculin, Edward R. Baldwin's<sup>2</sup> hopeful belief in a steadily advancing progression in our racial and clinical immunization, need no longer be based solely upon the automatic influence of an increasing frequency of morbid incidence acting as a progressive agent of increasing morbid attenuation, and of diminishing individual liability to the worst developments. That belief would be universally shared and acted upon for the systematic suppression of tuberculosis.

In his paper on "Prophylactic and Therapeutic Immunization: Its Possibilities and Limitations," S. H. von Ruck refers to Karl von Ruck's "*efficient vaccine*." As it contains in solution (chemically altered) all the active constituents of the bacillus, it can be applied to both purposes. He insists, however, that as soon as phthisis has set in, the tendency of tuberculosis to local healing is changed to a tendency to extension. It is no longer curable by tuberculin, for this can only cure pure tuberculosis. In phthisis, specific remedies may help, they cannot end the treatment.

*Preventive Inoculation* of the members of tuberculous families *has been practiced* for some years by W. M. Crofton.<sup>3</sup> Previously he gave them a short course of tuberculin (T. R.), with satisfactory health results. But, for the sake of a stronger antigen, he now uses living cultures of bacilli which he has found can be dissolved (and preserved)

<sup>1</sup> Therap. Monats., January, 1914.

<sup>2</sup> New York Medical Journal, January 23, 1915.

<sup>3</sup> British Medical Journal, April 10, 1915.

in benzoyl chloride (10 mg. in 10 c.c.). The dilutions are made in liquid paraffin containing 2 per cent. of the chloride. For therapeutic purposes, the highest dose he has given is 0.01 mg. (starting from 0.0000001 mg. in lung cases). For prophylactic purposes, more can be used (0.00001, 0.0001, 0.001, 0.01 for children, and up to 0.1 for adults; for infants, doses ten times weaker up to 0.001). He strongly advocates this remedy both for treatment and for prevention. It is so harmless and inexpensive that its use might be extended to calves in the hope of cutting off the bovine source of infection.

*Percutaneous Preventive Treatment.* A. Kutschera's<sup>1</sup> preventive method is this: The patients drop their tuberculin on the skin (once a week, varying the site), and rub it in with the thumb till it all disappears. Starting with one drop of a  $\frac{1}{25}$  dilution, each following week, up to the fourth, another drop is added. Then follows a four-weeks' similar increase with a  $\frac{1}{5}$  dilution. Finally, 1 drop of pure tuberculin is to be used; and to be increased up to 4 drops only. He has tried this method with success "as a protection" for 600 cloistered nuns. He recommends its continued use (up to two years) in tuberculous surroundings. But, for declared cases, he resorts to the injection.

*Tuberculosis Stamped Out.* J. Petruschky<sup>2</sup> claims to have achieved locally that great consummation for the 500 inhabitants of Hela, near Dantzig, simply by universal percutaneous tuberculin immunization with which he now combines antigens against other infections. Since 1911, no open tuberculosis has developed, and meanwhile the "closed" or latent cases have completed their recovery.

## THE CONTROL OF INFECTIONS AND ANTISEPTICS.

**Surgical Physiological Principles.** Medical "physiological principles" of a biochemical order are thrown into relief in Joseph Barcroft's illuminating Oliver-Sharpey<sup>3</sup> lectures on "A Comparison Between Some Physiological and Pathological Conditions." But the more direct approach is at the opposite, practical end of the question, with its life-size demonstrations of cause and effect in Nature's experiment, and in our own tentative ones. Turning then for a moment to surgery for its "fundamental principles" in the local suppression of wound infection we find some novel suggestions of primary importance in the closing section of Sir A. E. Wright's<sup>4</sup> address on wound infection which deals with "treatment by physiological methods." "Nature's aim is to overcome the local infective invasion and settlement by an adequate local outflow of phagocytic lymph. Ultimately the chief help we could render her would be through some command over local

<sup>1</sup> Wien. klin. Woch., June 4, 1914.

<sup>2</sup> Münch. med. Woch., February 2, 1915.

<sup>3</sup> British Medical Journal, April 24, 1915.

<sup>4</sup> Ibid., March-April, 1915.



lymph outflow." An indispensable first aid is our artificial disinfection of the infected surfaces through an adequate opening. The quickest sterilizing method might prove to be the "continuous bath or irrigation." If this should have been thoroughly accomplished, the physiological indication might be to "close" the sterilized wound, for "scab healing," instead of keeping it open by perpetual dressings. But, to revert to that ancillary regulation of lymph flow, of emigration, and of phagocytosis, a primitive method is *local hyperemia*. This might be obtained from hot fomentations or from injections of ether. A much more efficient method is that which he has recommended for years for rendering the lymph incoagulable, and for checking any excess of emigration—the *continuous application of a 5 per cent. NaCl solution, containing 0.5 per cent. sodium citrate* (to decalcify the lymph). The simple 5 per cent. salt solution works almost as well, and is proving of great use at the front, saving life in almost desperate conditions. For instance, in gaseous gangrene after amputations, where all the infected tissue had not been removable, it reverses the lymph-stream and draws out the poisoned lymph.

In his third lecture, Sir A. E. Wright introduces the new principle of employing *antisepsis vaccines* for prophylaxis and for treatment. He dwells first upon an indispensable clause: (1) For this thorough "prophylactic" efficiency, the wound must have been absolutely sterilized by antiseptic local measures. Their "curative" employment he considers under various conditions. (2) Where microbes make an eruption into the neighboring tissues. (3) In the case of "well-drained" wounds. (4) In that of those "imperfectly drained." (5) In septicemias supervening on wound infections. His conclusions are, that 2 and 3 have yielded, as anticipated, strikingly favorable results, and 4 and 5 very unfavorable results; while 1, which has not yet been put to probation, deserves a careful and extended trial, preferably in conjunction with "physiological drainage."

The *British Medical Journal* editorial of May 8, in commenting upon his forcible criticisms of the routine use of antiseptics, calls attention to the experimentally tested efficacy of a lanolin and wax paste containing up to 20 per cent. phenol and cresol; and to C. J. Bond's<sup>1</sup> demonstration that even strong antiseptics do not materially affect the healing of wounds. The value of the paste is endorsed by A. Wilson,<sup>2</sup> who also recommends dusting with salicylic acid 0.2 per cent. as an efficient germicide, after carbolic irrigation (1 to 20 or 1 to 40). In his able letter he upholds "true Listerism," which has most often been departed from. Experience proves that the "physiological aim" in healing cannot be attained; as saline, when freely used in baths and irrigation, so injures the granulation cells that they are robbed of their phagocytic value.

<sup>1</sup> British Medical Journal, March 6, 1915.

<sup>2</sup> Ibid., May 8, 1915.



The recommendations of the Naval Medical Committee, voiced by Sir Watson Cheyne,<sup>1</sup> award the first place to "borsal" powder (equal parts of boracic and salicylic acids), as efficient in preventing not only ordinary sepsis but the development of the bacilli of tetanus and of gangrene. Cresol paste is merely an antiseptic adjuvant; but Lister's salicylic cream (glycerine thickened with salicylic acid, with the addition of phenol 1 in 10), may be a yet better one, while quite equal to cresol as an unctuous vehicle.

*Embalming the Limb* is the "dry plan" for the principle of *closed wound treatment after disinfection*. This has been successfully practised within the French lines, during the whole winter, by M. Menci  re<sup>2</sup> for extensive injuries of the extremities, after primary infection. Its success was favored by the checking influence of cold on the proliferation of the septic vibrios. He gives a full account of this remarkable development of conservative surgery, which has enabled him to save limbs which, according to his former experience of twenty years, he could not have preserved on the "wet plan." Gaseous gangrene, being unamenable to antiseptics, necessitates amputation; and the stump should then be embalmed to ward off septicemia. But, in its absence, mangled and crushed limbs can be successfully embalmed, after removal of loose or dangerous splinters, and after an "effectual" antiseptic cleansing. This calls for three successive irrigations; with perchloride (1 to 1000), with carbolic (25 per 1000), and with peroxide (1 in 3); these are used for three or four days, after which only the peroxide. The wound is not absolutely closed, nor is it kept permanently dry; glass drains remaining *in situ*, and the dressing and irrigation being renewed daily. The "embalming" dressing consists of strips of gauze steeped in a solution of iodoform, guaiacol, eucalyptol,    10 grams; balsam of Peru, 30 grams; ether, 100 grams, which is also injected into sinuses, etc. Menci  re claims for his method that, instead of being, like the Egyptian method, for ever and aye, it is the quickest method of restoring, for life, limbs otherwise destructive of it unless promptly removed.

**Collosol Argentum and Collosol Hydrargyrum**, colloidal preparations of 1 in 2000 of the metals, of which Crookes (1911) had said that he knew of no microbe that was not killed in six minutes in his laboratory experiments, have been further investigated at Dundee<sup>3</sup> by Prof. C. R. Marshall and G. B. Killoh. They state that, while the mercurial colloid has a limited, yet uncertain, "bactericidal" action, the silver has none whatever; but that both, pre  minently the silver, have considerable "antiseptic" power. It is important to note the emphatic testimony of A. Legge Roe<sup>4</sup> after three years' successful "ophthalmic"

<sup>1</sup> British Medical Journal, May 22, 1915.

<sup>2</sup> Cf. Medical Press and Circular, April 28, 1915.

<sup>3</sup> British Medical Journal, January 16, 1915.

<sup>4</sup> Ibid.

use of the collosol argentum: "It is the most useful preparation introduced since cocaine." Incidentally to ophthalmic antiseptics, we might add that ethyl hydrocuprein has been extolled by M. Goldschmidt<sup>1</sup> and others, for pneumococcal infections of the eye.

**Iglodine, a Solution of Tri-Iodo-Ethyl-Phenyl** ( $C_6H_4I_3 + H_2O$ ), in use for two or three years as a powerful antiseptic and healing agent, in the Tyneside factories, is now receiving the attention of the War Office, to substantiate its claim to a practical superiority over all other agents, as safe and efficacious "locally" for fresh wounds and all mucous affections, including those of the conjunctiva, as well as for all surgical lesions at a late stage; and also "internally" in doses up to  $\frac{1}{2}$  ounce, three or four times daily as a sedative, and as a stimulant for phagocytosis. "Concentrated iglodine" (the saturated solution) contains 1 part iodine in 30. It is available as a basis for ointments and liniments.

**A New Intravenous Cure for Infections, Particularly Pneumonia**, has yielded F. E. Park,<sup>2</sup> during a two years' trial, 100 per cent. successes. The treatment is to inject very slowly, *trans cutem*, 2 to 5 c.c. of a sterilized 2 ounce watery solution containing 15 grains each of sodium salicylate and of soluble iron phosphate; to which are added in the cold 15 minims of a saturated calcium-creosote mixture. The solution is then passed through a porcelain filter.

**Transcutaneous Antisepsis in Erysipelas**, by four daily local paintings with 5 per cent. *oil solution of phenol*, exclusive of any other application or of any covering, is found by J. Arneth<sup>3</sup> the quickest cure, and an unfailing one (except in malignant, rapidly fatal cases). Eventual cleansing (with oil only) must be delayed until several days after complete local subsidence. It is striking, he notes, that the diseases with pronounced neutrophil leukocytosis, pneumonia, diphtheria, tonsillitis, and erysipelas, do not immunize against future attacks. Yet instances are known of complete recovery from leukemia after an intercurrent erysipelas.

**Charcoal and Kaolin as Intestinal Disinfectants** (in Cholera, Typhoid, Dysentery, Diarrhea, etc.) Wolff-Eisner administers them stirred up in oatmeal gruel, with a little red wine. Stumpf's persistent advocacy for cholera of "bolus alba" (kaolin or fossil earth (kieselgur)) has led to striking success in the present war. Kaolin and blood charcoal rob any staining solutions of their "stains;" they also bind any toxins unamenable to serotherapy, while sweeping away the microbes.<sup>4</sup> In effect, this is for Eisner a kind of "immunotherapy." He reminds us, too, that Hofmeister had declared that all the phenomena of immunity were due to chemical and colloidal interactions. The therapeutical

<sup>1</sup> Wien. med. Woch., July 7, 1914.

<sup>2</sup> Medical Record, March 6, 1915.

<sup>3</sup> Ther. d. Geg., September, 1914.

<sup>4</sup> Cf. *re* charcoal, "The Principles of Treatment of Typhoid Fever," Lancet, 1898, ii, 23.

suggestions contained in these facts seem to us to extend far beyond the local disinfection described.

For *tetanus*, also, we have learned from the war the prevention and the cure. E. Jakobsthal thinks that its unexampled prevalence at the front was due to "trench digging." It might perhaps be added: "possibly also to the unusually wet and muddy seasonal and local circumstances of the winter campaign."

**Biomechanics and Organomechanics.**—HEMADENOLOGY. The terms alone are strange: the material is familiar. This is also eminently true of the "new specialty" in course of exposition by Sajous,<sup>1</sup> which is growing apace to dimensions forbidding any attempt to abstract it in our limited space. That study of the blood glands was "not new;" he had been foremost among their earliest investigators. Yet his happy conception of a new term has given birth to a new idea. No ideas can materialize except through their expression; in one enactment it makes, moulds, and hardens them to build with forever, truly the mould as well as the straw for the shapeless but unlimited supply of our mental clay. Each idea, thus emerging in its expression, becomes a building brick for further expressions out of our potential ideation. That material was already in sight and in handling—only waiting for his word to shape it. Sajous' great innovation is that he bids us "specialize." He had long been doing it; but we needed that "clear idea" for the building of others. As all specialization is a splitting from some larger matter, names are henceforth wanted for our clear conception of "the whole," and of "its remainder." The "whole," are our complex *organomechanics*. As primates we are their unique representatives. The multiple "remainder" will in due course have to be named into future specialties. Meanwhile our new definition breeds another—"the mechanics which are not of organs:" and these we share with the monads. "Biomechanics" bring us nearer to *bios*; and to the end of our thinking. We shall probably long miss any word to think with beyond "vitality." "Mechanics," at any rate, do call forth a further splitting effort. But, though we can name a contrast for it as "Chemics," this is all *vox et praepterea nihil*. We cannot split the "movement of life" away from the movement and energy of the atom.

We might build up a specialty of "chemosis,"—*e pur si muove*: another of "kinesis,"—and still *panta rhei*; a perpetual reconstruction of life is the means to the crumbling collapse of its decay. Synthethic and indestructible, matter ignores our analysis and its laws. Its indivisible oneness is the unanswerable witness, both to the unlimited "creative" power of our human *logos* or reasoned language for unrealities, and to the "limiting obstacles and misconceptions" which it raises against our ever knowing the essence of the real.

<sup>1</sup> Cf. New York Medical Journal, 1914-1915.



The *Hemadenic Syndromes* are inevitably complex, in the first place because the blood glands are mutually modifying; thymic deficiency will lower the efficiency of all of them. At later stages, their interplay may defy analysis; but it underlies the trend of our varied organic failures and of our many infections. Again, while the greater syndromes, such as myxedema, acromegaly, gigantism, progeria, and others, are identifiable with special glands, they are all to some extent "poly-glandular." Slow changes have larval beginnings; and severe diseases, their milder types. We have begun to realize that our typical syndromes run on from "ill-developed types" which still escape our recognition; as did until lately the non-edematous instances of myxedema. That vaster field is still in the shade; but there is practical shrewdness and relative safety in cultivating hemadenic diagnosis all round, as "never quite out of place," so long as it does not obscure greater things at stake.

The "*Kinetic System*," to which G. W. Crile<sup>1</sup> attributes the conversion of the latent, into the live energy which is required for the purposes of life preservation, comprises the brain, suprarenals, thyroid, liver, and muscles. Under any excessive kinetic expenditure, whether physiological, adventitious, or morbid, three of these, the brain, the suprarenals, and the liver, have yielded to him histological evidence of *structural wear*, i.e., of "work" changes. Hitherto the thyroid has not yielded that evidence; but everything points to its being associated with that triad, as the "pacemaker" for the discharge of energy. Cerebral softening, Addison's disease, cirrhosis of the liver, and myasthenia gravis illustrate the effects of organic exhaustion, in some of the departments of that essential system. *Shock*, on that theory, might be conceived as due to its over-stimulation and exhaustion. The method of anoci association serves as an economizer of that structural wear within the kinetic system. But sleep, by its absolute rest, alone can be equal to its integral restoration.

BIOMECHANICS and DIATHESIS. *Scrofula or Struma; and the Status Lymphaticus*. These vexed questions are referred to by McNeil<sup>2</sup> in an interesting paper on "fatal fulminant types of infection" (particularly infantile bronchopneumonia, and puerile pneumonia at schools). He endeavors to identify the "status," but as it is defined by Paltauf, with an underlying "strumous diathesis," that recognized by Escherich, Moro, Heubner, and Cornet. That diathesis has its characteristic anatomy; and it is further characterized by an "intensity of local reaction" to tubercle and to tuberculin. That more intense liability extends, he thinks, to other severe infections. On that basis he comments upon the probable nature of the "status lymphaticus." In the ensuing discussion some scepticism was expressed by F. Langmead as to the

<sup>1</sup> New York State Journal of Medicine, May, 1914.

<sup>2</sup> British Medical Journal, October 3, 1914.

credentials of the "status;" he questioned the imperfectly justified frequency of its use in explanation of sudden deaths, and the ill-established standing now allowed to it in legal medicine; a serious matter, as the real cause of death might too readily be overlooked under that assumption.

*The "Spasmophilic" and the "Exudative" Diatheses.* A clear distinction between them (with their bibliography) is supplied for us editorially.<sup>1</sup> *Spasmophilia* (tetany), usually associated with rickets, is an infantile or puerile central nervous superexcitability. It is identifiable by the electric test (Erb's phenomenon); by Trousseau's arm-constriction sign ("obstetric" hand-attitude, the same as in carpopedal spasm); and by Chvostek's facial-nerve sign (facial twitchings on tapping the nerve at the cheek). Czerny's *Exudative diathesis* (the "fat," and the "lean") was attributed by him to some underlying faults in the metabolism of fat. As the name implies, it is characterized by a "catarrhal" liability of the mucous membranes, chiefly the respiratory; and by cutaneous pathological manifestations which show more or less of an exudative tendency. There is no diathetic link between them, and their fields are separate.

**Pulmonary Organomechanics.** PERPETUAL MOVEMENT, that of life, of growth, and of reproduction, almost seems to have been realized *in vitro*, with the help of suitable artificial nutrition. Carrel<sup>2</sup> finds that, barring accidents, connective-tissue cells, when exsomatized with their living environment, may proliferate indefinitely, like colonies of infusoria. An artificial immortality might thus exist for the tissues, which is unattainable for the organism.

**PULMONARY ELASTICITY.** *In emphysema and asthma* the "respiratory" trouble is identified by Hoover and Taylor<sup>3</sup> with the distention of the infundibula; this impairs the equable intra-alveolar diffusion of CO<sub>2</sub>. From this we may infer that the root of the mischief is in the failure of their "elastic function."

**IMPERFECT EXPIRATION IN CHILDREN.** Lichtwitz had described this in young adults with "constitutional eczema." F. Göppert<sup>4</sup> describes it in children of pronounced "exudative type," with thickened membrane (might it be also with subnormally elastic lungs?). To avert the various evil consequences, they should be systematically taught deep expiration.

**THE "ELASTIC TISSUE" ENIGMA.** A SUGGESTION FOR ITS POST-MORTEM STUDY IN ARTERIES KEPT PERMANENTLY ELASTIC; AND IN THE "ROOSEVELT ELASTIC LUNG."<sup>5</sup> The "natural history" of the

<sup>1</sup> Journal of American Medical Association, April 24, 1915.

<sup>2</sup> Journal of Experimental Medicine, 1914, xx, 1.

<sup>3</sup> Arch. Int. Med., January, 1915.

<sup>4</sup> Berl. klin. Woch., July 27, 1915.

<sup>5</sup> Ewart, British Medical Journal, July 17, 1915, vol. ii.

elastic fibre is a standing problem, which the inferior elasticity of India rubber does not help us to solve. We perceive how it is destroyed in the lung by overstrain in emphysema, and by disuse in obesity; and how readily it is then disposed of by phagocytosis. The mystery is its surprising normal "endurance." This would almost seem to be a function of its mechanical exercise, even more than of its nutrition. Facts have been recorded which demonstrate a patchy local "regeneration." But of its "alimentation" we know nothing, except that the fibre can be stained. And yet, if we assume that it grows like the length and breadth of our muscular and of our tendinous fibres, it should be, at any rate at that stage, receptive of nourishment. On the other hand, the following facts would suggest that, when full grown, its vital exchanges are of a minimal order; and its viability and function largely dependent upon motile and hygrometric factors, while apparently independent of any direct innervation.

The work of Alexis Carrel has opened up a new era in surgery, that of "transplantation;" by demonstrating the persistence, for appreciable periods after somatic death, of some degree of "vegetative" cellular vitality in the simple tissues, rendering them capable of a revival of their nutritional activity when implanted into vigorous living tissues; and also the facultative prolongation by low temperatures of that suspended animation; nay more, the persistence, after successful transplantation, of the "functional" capacity of some of the organs, when exsomatized *in vivo*.

The lung is hitherto the isolated instance of "a dead organ" capable of preservation for indefinite periods in a state of fitness for discharging its "passive" motile function almost as well as during life, thanks to the survival of some degree of elasticity in all its textures. It affords the unique example of one of our tissues, the elastic fibre, preserving indefinitely, without any vital nutrition, "the fulness" of its own simple function, which seems to be limited to passive movement. I might venture to suggest that this strange instance of a relative "artificial immortality of function" should be associated with the name of the distinguished physician, my lamented friend the late John West Roosevelt of New York, to whom we owe its demonstration.

The only published account of his method which I can trace is that which he gave to the New York Pathological Society, of which he was then president, at its meeting of December 10, 1890. In his own words: "The lung exhibited was removed on January 11, 1890. It retains very nearly the normal color of a freshly removed lung. It expands and contracts in an apparently normal manner. The vesicular murmur can be plainly heard in it; and percussion gives the same note as obtained from fresh lungs. The process will be seen to be a modification of the old glycerin-carbolic method, well known and often used to preserve anatomical specimens in an elastic condition. The modifica-



tions are important, however, and the results far better than any obtained in the old way. The idea of the method is, first, to fix the tissues by the chromic and acetic acid solution; then to introduce the glycerin-carbolic solution; and finally, to get rid of this, and practically to make an 'oil-tanned' lung."

The composition of the three solutions and the mode of using them are then given. It does not appear that, at that time, he had prepared any specimen of both lungs, or that he subsequently exhibited, or published any description of, any such. That which he prepared to present to me at New York in the spring of 1892, may perhaps have been the first. These lungs were slightly pathological. They did not remain in efficient working much more than a year; partly perhaps owing to insufficient exercising. Meanwhile, in the early summer of 1892, I prepared according to his latest directions a perfectly normal and complete specimen of both lungs with trachea. This was a complete success. It was long used for demonstration at St. George's Hospital; and it still preserves its elasticity after a lapse of nearly twenty-three years. Unhappily, through a preventable accident, it has quite recently developed a bad "puncture," which now disables it, though it is still inflatable and elastic, for any complete and permanent inflation. That long record, and the fear lest, owing to his untimely death, the value of his latest method might otherwise be lost to science make me anxious to publish those simple directions, which enabled me to secure that success, without the help of any actual demonstration of his technic, or previous knowledge of the published details of his earlier method.

*"Improved Method for Preparing Lungs in Order to Preserve Their Elasticity and Gross Anatomical Appearance.* The lungs must be removed intact, and the pulmonary bloodvessels cut as close to the heart as possible. If it is intended to prepare both lungs, the trachea should be cut as high as possible. If only one is prepared, cut the bronchus at its junction with the trachea. Insert and tie as large a cannula as possible in the bronchus or trachea, and in the pulmonary artery."

"(1) Take of Müller's fluid 1000, and of acetic acid 75. Fill the lungs through the air-passages, and suspend them in solution for twenty-four hours or forty-eight. Height of funnel, not more than 3 feet. (2) Inject through the artery a mixture of glycerine 4, carbolic acid 1. (3) Dry as well as possible, by suction applied to the air-passages. Then inject through the artery, under pressure of five or six feet of water, cotton-seed oil 100, oil of origanum 10. Dry as well as possible, and keep in a crock."

The "Roosevelt elastic lung" is therefore remarkable for its durability as a whole; but much more so for that of its elastic fibre and of the elastic function in it. A striking contrast is displayed between the pathological history of the fibre in life and its artificial history under

preservation in death. As shown by emphysema and by obesity, it is more prone than most living tissues to mechanical destruction by over-use or disuse. As shown by arterial degeneration and by vascular syphilis, it is also exceedingly liable to destruction by microbes and by phagocytosis. This is doubtless correlated with an extremely low coefficient of nutritional activity and requirement; which is fully demonstrated by its survival, when it is adequately protected against the scavengers of death. This points to it as one of the most mysterious of our remaining biological mysteries.

We know little about it. But we do know that it is the last to die; and that it is also our *ultimum movens*, when, by a final vital recoil, the all-pervading "elastic skeleton of configuration" restores our normal lineaments after their muscular rigidity. That enigma, the last we have approached, might well hold our solution for another not the least important of those yet to be solved—"the mechanics of our biomorphology." If, as it appears, the elastic fibre has in its mechanical keeping our individual polyorganic architecture, might it not conceivably be itself the builder; and, if so, the missing link between our physics and our vital energy? Adami's striking conception of "fibrogenesis" as a linear intraplasmatic crystallization along each line of movement and of stress is suggestive of a great mechanical antithesis. Our "rigid" skeleton of support is mineralized through "rest;" our "pulsatile" elastic skeleton of organic architecture and nutrition would be the direct mechanical product of the individual vital "work." There, too, might possibly lie the true explanation for our chief clinical puzzle. The extreme diversity in our "normal" individual "sphygmopiesis" might be but an expression of the diversity in our "physical" or elastic coefficient, as the inviolable or irreducible individual factor in our vital "dynamic equation" between the nervo-muscular heart and the neuromyoelastic artery.

## THE RESPIRATORY FUNCTION.

**I. The "Extra-pulmonary" Introduction of Oxygen.** THE SUBCUTANEOUS USE OF OXYGEN has acquired great extension, chiefly in France, where Martinet's "oxygenator" is employed. J. McCrae,<sup>1</sup> from his experience in 33 cases, believes that it would prove invaluable in accidents from anesthesia, in suffocative edemas, cardiac and renal dyspnea, asphyxia (also at birth), syncope, electrocution, etc. Its failures in pneumonia might be explained by Peabody's observation that the O-combining value of the blood falls with the progress of its pneumococcus infection. H. O. Howitt,<sup>2</sup> is also in favor of the method, which, for urgent purposes, is superior to inhalation.

<sup>1</sup> American Journal of Medical Sciences, December, 1914.

<sup>2</sup> Medical Press and Circular, December 23, 1914.

OXYGEN FOR GAS PHLEGMONS was used by Thiriar as a jet played upon the stump; but by Müller as an intramuscular injection. P. H. Sudeck<sup>1</sup> has successfully adopted the latter method in two bad cases, without opening up the abscess. He states that the German hospital trains now carry oxygen tanks for that life-saving purpose.

OXYGEN INJECTION IN TETANUS might possibly be of service, as suggested by Howitt and Jones' results<sup>2</sup> in guinea-pigs. In a number of these the bacillus was inoculated *sub cutem*. All died of the disease, except those which had been given at once an oxygen injection; they did not develop any symptoms.

**II. Poisonous Inhalations.** A report on the German poisonous "gases," more strictly "fumes," would be premature at this date.

SMOKE AS A FACTOR COMPLICATING CARBONIC OXIDE POISONING IN COLLIERY DISASTERS. Professor E. Emrys-Roberts<sup>3</sup> points out that the smoke from mine fires or explosions contains, besides CO and CO<sub>2</sub>, numerous irritant gases, comprising sulphurous and nitrous fumes, acetic acid and ammonia, which give rise to immediate symptoms of a profuse running at the eyes, coughing, and a sensation of choking. These may give place to those of CO poisoning. But the irritation is apt to produce, after a few hours, a remote effect upon the lungs. Bronchitis is set up; but in severe cases acute edema of the lungs, or broncho-pneumonia may develop. The causation of these complications by smoke is abundantly proved—(1) because in cases of CO poisoning uncomplicated by smoke they never develop; (2) because when they develop there is an invariable history of exposure to smoke; and, (3) because in cases of poisoning by nitrous fumes from explosives, in the mine or on the battlefield, precisely similar pulmonary symptoms are met with. Since the irritant gases present in smoke are freely soluble in water, he emphasizes the value (during exposure) of tying a wet cloth over the mouth and inhaling through it; and he warns against the fallacy of employing a dry cloth for that purpose. We might add the obvious suggestion for combatants that, as water is not available, they might moisten a handkerchief with their own saliva.

**III. Pulmonary Mechanics.** THE VALUE OF POSTURE, so long familiar to surgery, is approaching practical recognition in connection with the thorax and its organs, long after it was pointed out in obstetrics by T. Gaillard Thomas (1869). The dorsal posture in disease is symbolic of the "wait and see" of our general therapeutic expectancy. Posture is paramount for healthy development, and therefore important for infants. E. M. Mosher,<sup>4</sup> who praises the work of the American Posture League, has a care for their abdomen. He prefers a basket, well secured on the balcony, to a bumping "pram;" it can vary their attitude from

<sup>1</sup> Med. Klin., November 22, 1914.

<sup>2</sup> Lancet, April 10, 1915.

<sup>3</sup> British Medical Journal, March 20, 1915.

<sup>4</sup> New York State Journal, December, 1914.



the dorsal to the prone, and to the lateral. For that special purpose the "baby-rest" and the "infant exerciser" had been long ago suggested. Healthy development of the abdomen has its chief value in working that of the thorax and diaphragm. But, in rachitis, urgent mechanical indications arise. As pointed out by J. Howland and E. A. Park,<sup>1</sup> it is more fatal by inexpansion and atelectasis than by pneumonia. From this we should draw practical inferences. The yielding anterior wedge of the "pigeon-breast" being sucked "in" instead of "out" at each inspiration, is worse than useless to breathe with; unless it can be duly supported by some internal pressure. In a few infants, multiple "rib fractures" eventuate; but, in the great majority, only a life-long thoracic deformity, and disadvantage. All this is preventable by abdominal treatment, which should be largely mechanical. The "expectant" dorsal decubitus, which in rickets leaves the front helpless and useless, denies the patient the life-values of the respiratory use of his back, with its great unused, but available, basic pulmonary reserve.

DYSPNEA AND RESPIRATORY STIMULANTS. Since Reach and Röder<sup>2</sup> showed that for a given "ventilation air-volume" per minute, a quick rate gave poorer intra-alveolar exchanges than a slow one, the variability of the "dead space" (*e. g.*, its variations under atropine) has confirmed the conclusion that "what most matters is the alveolar," not the total, ventilation. Edsall and Means<sup>3</sup> have studied, with Benedict's universal respiratory apparatus, the influence of respiratory stimulants upon the alveolar ventilation and CO<sub>2</sub>; the total ventilation; and also the metabolism, as its independent stimulation might simulate a respiratory stimulation. Strychnine did not influence alveolar CO<sub>2</sub>, therefore not stimulating the R. centre. Caffeine increased the metabolism slightly, diminished the CO<sub>2</sub> tension, while raising the alveolar ventilation, therefore stimulating the centre. Camphor was inconclusive. Atropine definitely increased the metabolism, lowered alveolar CO<sub>2</sub>, and raised alveolar ventilation, therefore stimulating the centre. But its action upon bronchial constrictors and dilators, which they verified, has to be considered in drawing conclusions.

THE INVERTED POSITION IN UNEXPLAINED OBSTRUCTIVE DYSPNEA. We are reminded of the value of this for diagnosis and treatment by G. Caronia's<sup>4</sup> report of a fatal plugging of the bifurcation and main bronchi with caseous glandular debris. The boy, aged seven years, was intubated for suspected laryngitis; he subsequently submitted to low tracheotomy for a foreign body; and finally artificial respiration was resorted to in vain. In the more fortunate cases, successive inversion, with upper spinal thumping, might aid the violent cough in expelling fragments, the nature of which might guide the treatment.

<sup>1</sup> New York Medical Journal, July 4, 1914, p. 49.

<sup>2</sup> Biochem. Ztschr., 1909.

<sup>3</sup> Arch. Int. Med., 1914, p. 897.

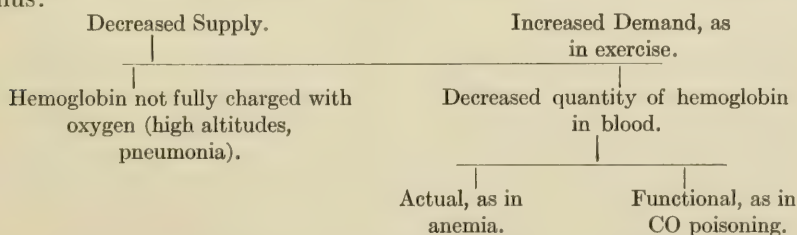
<sup>4</sup> La Pediatria, 1914, vol. xxii.

**SURGICAL DECOMPRESSION FOR MEDIASTINAL TUMORS** has been carried out by F. König<sup>1</sup> for the relief of dyspnea from a malignant lymphoma, by slitting the sternum and keeping it permanently gaping by two ivory wedges inserted top and bottom. To insure their healing *in situ*, the wedges must be wrapped in soft parts.

**STAMMERING AND ITS SCHOOL TREATMENT.** The incidence among children, according to the Board of Education's Sixth Annual Medical Report, is nearly 1 per cent. higher in the younger than the elder, and in boys than in girls. In Middlesex, Dr. Young reports that whereas his district's normal incidence of enlarged tonsils and adenoids was 10 per cent., among the stammerers it was as high as 21 per cent. The defect is associated with deficient respiratory effort, as well as a false usage of the larynx. Defects of the ori-nasal mechanism, on the other hand, affect the formation of sounds and articulation. An excellent treatment is to arrange for small special classes. Home coöperation is essential. A good deal of help can be given by the teachers, more particularly at the early onset of the disease. Steps must also be taken to save the child from ridicule at school.

**IV. Respiratory Organomechanics.** THE LATEST STUDIES ON ACIDOSIS AND DYSPNEA IN RENAL AND CARDIAC DISEASE by F. W. Peabody<sup>2</sup> should be read in the original. As high grades of acidosis may be reached without influencing the respiration in any clinically perceptible degree, he concludes that its development is not the direct or sole cause of cardio-renal dyspnea.

**DYSPNEA AND THE RESPIRATORY FUNCTION OF THE BLOOD.** We extract from J. Barcroft's<sup>3</sup> luminous Second Oliver-Sharpey Lecture on "Renal Oxygen Want at High Altitudes and in the Wards," the following data. The "Causes of Bodily O-want in General" are tabulated thus:



*In exercise* (and probably from other forms of muscular O-want) the blood is flooded with CO<sub>2</sub>. Gradually this is replaced by lactic acid, even to a diminution of the CO<sub>2</sub> pressure. The result is lessened alkalinity of the blood, *i. e.*, an increase in its H-ion concentration. *At high altitudes*, by comparison with the conditions at low levels, it has been established by different observers and with different methods

<sup>1</sup> Beitr. z. klin. Chir., 1915, No. 2.

<sup>2</sup> Arch. Int. Med., August 15, 1914.

<sup>3</sup> Cf. Brit. Med. Jour., May 1, 1915.

that, apart from exercise, there is a lowering of the alveolar  $\text{CO}_2$  (as an index of the  $\text{CO}_2$ -pressure in the arterial blood), and also a slight change of the blood in the acid direction, sufficient to set up the resulting degree of breathlessness. This confirms Barcroft's conclusion that, at 10,000 feet and even as low as 7000 feet the kidney, by a process of excretion of bases or of retention of acids, reacts to oxygen-want by increasing the hydrogen-ion concentration of the blood. The result of the alveolar  $\text{CO}_2$ -fall is a higher relative O-proportion, by as much perhaps as 12 mm. pressure. Oxygen not only enters the lung more easily, but leaves the blood more quickly at the kidney or elsewhere. This physiological adaptation is a great asset against the effects of a reduction of our normal protective pressure down to one of 450 mm.

A *Pathological Type of Dyspnea* is described by Barcroft, in terms of a "chemical lesion" (using Thomas Lewis' expression), by comparing two clinical cases.

CASE I.—Aged sixty-seven years, large heart, no murmurs; respirations 30 to 40; albumin but no casts; cyanosis very slight; alveolar  $\text{CO}_2$ , 35 mm.; acidosis = 0.02 per cent. lactic acid; the reaction of blood to  $\text{CO}_2$  at a "proper" concentration was 1 c.c. blood at 31 mm.  $\text{O}_2$  unites with 0.094 c.c.  $\text{O}_2$ .

CASE II.—Aged twenty-nine years, with enlarged mitral-stenotic heart; respirations 33; deep cyanosis; albumin, no casts; alveolar  $\text{CO}_2$ , 43 mm.; acidosis of blood = nil; reaction of blood: 1 c.c. at 37 mm.  $\text{O}_2$  unites with 0.097 c.c.  $\text{O}_2$ .

His conclusion is that there is a type of dyspnea truly "renal." Its degree, for any given accomplishment on the part of the kidney, will depend upon the irritability of the respiratory centre,—for this, according to the admirable work of Poulton and of Peabody, seems capable of fluctuation in renal cases. For treatment, oxygen suggests itself; but the limitations of the treatment by oxygen are as great as the limitations of our present methods for its administration. Some justification arises from these considerations for the main view that, in the "adaptations" of the body to special sets of circumstances, there lies the germ of certain "chemical lesions," and that the pathological is sometimes rather the "exaggeration" of the physiological than its "antithesis."

## THE BLOOD CIRCULATORY FUNCTION.

**I. Hematovascular Mechanics (Hemorrhage and Edema).** ACUTE PULMONARY EDEMA. A. Leclercq<sup>1</sup> contends against the prevailing view that left ventricular weakness is responsible for this, as it is for angina pectoris. He groups the cases into three sets: The mechanical,

<sup>1</sup> Medical Presse, June 17, 1914.



the infective, and the toxic variety. He discovers in all of them a similar course, with three successive events: (1) Acute pneumoplegia; (2) paralytic inhibition of the vagus; and (3) acute asystole of the right heart. The affection differs from angina in being essentially pulmonary. Bleeding, which relieves the right heart, and at the same time removes toxins, is the most efficacious measure.

THE MECHANISM OF PAROXYSMAL EDEMA seems to be essentially local and neurovasomotor. The general or distant factors are considered by W. W. Palmer<sup>1</sup> in connection with the kidney and its varying degree of permeability for salt; and also with the bowel, as sharing in its excretion. A yet more obscure factor is the metabolic, concerning which he makes the important suggestion that mild degrees of "acidosis" may underlie some of the more inveterate liabilities to the symptoms.

ANGIONEUROTIC EDEMA is seldom fatal, unless attacking the throat. C. E. Munger<sup>2</sup> reports two cases, and deplores that the treatment is hitherto empirical and highly unsatisfactory. He sees a striking similarity between its failures and those of anaphylaxis.

FOR THE TREATMENT OF URTICARIA, Allan Eustis<sup>3</sup> believes in Salomon's dietetic theory and practice, based upon the view that the symptoms are traceable to a definite putrefaction—derivative of "Histidin," which is a normal amido-acid from the pancreatic digestion of proteins. Reduction or cessation of the protein supply is the essential. In any tendency to intestinal stasis, Eustis recommends a combination of 1 grain of calomel with 2 grains of rhubarb and of phenolphthalein, to be repeated if necessary. L. J. Kidd<sup>4</sup> recommends no adrenalin; and, instead of calcium chloride,  $\frac{1}{10}$  grain calcium sulphide at bedtime daily, and regular small doses of thyroid extract. H. Waldo<sup>5</sup> suggests that ichthyol (5 min. thrice daily) might be effective.

## II. Vasohectic Mechanics (Cytotoplasmic and Fermentative) Thrombosis and Resolution; Fibrinosis and Fibrinolysis; Hematosis and Hemolysis.

1. THE CONTROL OF COAGULATION. *Coagulen for Hemoptysis.* Hermann Riedl<sup>6</sup> reports, in his paper on the treatment of hemorrhage, the successful arrest of a severe hemoptysis in a young bleeder, ineffectually treated by ice, morphine, stypticine, ergotine, etc., by an intravenous injection of this remedy (1 gram in 10 c.c. aq. dest., sterilized by a few minutes' boiling). Coagulen is prepared from the blood platelets of animals, as a soluble yellow powder. It has been found useful locally to check parenchymatous bleeding in operations; and, in hypodermic or intravenous injections, for hemophilia. He quotes the recent view that the platelets contain the thrombozyme, which combines with the thrombogen derived from the bloodvessel to induce coagulation in the presence of calcium salts.

<sup>1</sup> Arch. Int. Med., February, 1915, vol. xv.

<sup>2</sup> Medical Record, June 6, 1914.

<sup>3</sup> New Orleans Medical and Surgical Journal, April, 1914.

<sup>4</sup> British Medical Journal, 1915, i, 832.

<sup>5</sup> Ibid.

<sup>6</sup> Wien. klin. Woch., January, 1915.

"HYPERINOSIS" AND "TOXEMIA" IN PNEUMONIA. W. H. Wynn's<sup>1</sup> paper advocating "early vaccine," which he has found capable of disposing rapidly of the toxemia, though incapable of clearing away the consolidation, or even of preventing its after-development, has led the writer<sup>2</sup> to infer that there are two factors for study and treatment: The "blood-toxemia," answerable for the grave symptoms which evolve mainly in the nervous sphere; and the "blood-hyperinosis," relatively harmless, but responsible for the lesion. Linked in their etiology, they are independent in their natural history and in their therapeutic response. The vaccine possesses only a partial abortive effect; it would therefore need, for completeness, some fibrinolytic adjunct. Chantemesse has shown that large doses of citric acid or citrates act as a preventive, and as a cure, for the severe phlebitis apt to arise under the predisposing influence of the hyperinosis of advanced pregnancy. This achievement is analogous to that of the writer's "citric and iodide" treatment (immediate and hourly medication by potassium iodide, ammonium citrate, and hot lemonade (with the rind) in addition to an initial local leeching, and to exclusive whey for twenty-four hours) which, in curable pneumonias, aborts or arrests the toxemia by preventing or by rapidly resolving the consolidation. Unlike "early vaccine," this cure is a complete cure, single handed. We have, therefore, two efficient lines of treatment, the bacteriolytic and the fibrinolytic; but only one practical method which combines them both; and which is always reliable, both as to the suitability of its materials and their never-failing supply.

2. THE CONTROL OF THE FACTORS OF COAGULATION. In their study of the "acceleration" of coagulation by rapid and progressive hemorrhage (might "tachythrombosis" and "tachinosis" be two convenient differential terms to handle?), K. R. and C. K. Drinker<sup>3</sup> find that antithrombin being otherwise constant decreases with the lessening of the coagulation-time, while prothrombin first slightly increases and then slightly decreases; and that fibrinogen decreases with the progress of hemorrhage. They note that the platelet counts "do not vary" in the course of the bleeding.

Hess and Fish<sup>4</sup> have studied the *coagulation factors in infantile scurvy*: They could not trace its defect to calcium deficiency, nor to antithrombin excess. The platelet count was normal. They advocate potato water as the best addition to any pasteurized milk; superseding the necessity for orange juice. Czerny's "exudative diathesis" is a definite predisponent. Olive or cod-liver oil for weeks were not preventive. Has daily castor-oil ever been tried, which I find useful in rickets?

<sup>1</sup> British Medical Journal, March 13, 1915.

<sup>2</sup> Ibid., April 3, 1915.

<sup>3</sup> American Journal of Physiology, February, 1915.

<sup>4</sup> American Journal of Diseases of Children, December, 1914.

A. *The Chemistry of Blood Coagulation* forms part of the continued research by B. Stuber and R. Heim<sup>1</sup> on the varied biological influence of lipoids, upon phagocytosis and clotting in particular. They have traced a direct connection between the fat-splitting and the clotting ferments; steapsin proving to be even more effective than thrombo-kinase. The arrest from leech extract also comes under the operation of their "law" that the fat acids are classifiable as regards clotting power in a homologous series according to the number of C atoms in their molecule. The first phase in coagulation is the production of a lime-fat soap; the second, that of a lime-fat-soap fibrinogen; the lipolytic ferment "blood-lipase," which appears to be under the control of certain blood glands, acting as a catalyzer.

*The Coagulant Action of Calcium Salts.* In connection with the still uncertain practical question as to the precise value of the cardiac, vascular, and pulmonary calcium medication which Sir James Barr has so strongly urged rather in advance of our pharmacological knowledge, and in special connection with its influence upon blood coagulation, we may call attention to Charles O. Jones's<sup>2</sup> conclusions from an important biochemical investigation in rabbits, at the University of Liverpool. It would appear that the calcium is usually excreted by the intestine as an inorganic salt, and that it is only when the amount in the blood is very great that fatty acid is dragged out with it and forms soaps. Following an intravenous injection, or after repeated injections acting as an intestinal astringent, the feces became dry and smaller in amount, and finally the animal died. Extensive *ante mortem* clotting was found in the heart and vessels. The stomach was full of food (the appetite remaining almost unimpaired). The small intestine was full of food; but the large intestine, especially its lower third, was almost empty, containing only a very few small and dry scybala.

The explanation appears to be as follows: The calcium equilibrium is kept constant normally by the kidneys, excess being thrown out as phosphate, carbonate, and oxalate. Calcium as inorganic salt, probably as phosphate, is normally excreted by the large intestine, and probably many cases of constipation are due to excessive excretion by the gut. If the calcium increases in the blood, the kidneys, and intestine work harder to throw it out. When the accumulation rises above toleration point, the kidney is thrown out of action; but the intestine is still able to excrete it, and does so, though less and less actively owing to the astringent effect. Finally, fatty acid combines with the calcium and this is excreted by the bowel as calcium soap. But owing to intestinal paresis from the astringent action, calcium is increasingly dammed back till it causes clotting of the blood, and the animal dies. If this is so, what protection has the animal organism against a sudden invasion

<sup>1</sup> Münch. med. Woch., July 28, 1914.

<sup>2</sup> British Medical Journal, March 13, 1915.



of calcium salts? Is immunity confined to the organic world, or does the same result occur in the inorganic? Jones derives from those observations the following conclusions: (1) Calcium salts, when injected into the blood in small quantities, are excreted by the kidneys as phosphates, carbonates, and oxalates; (2) in larger quantities the bowel also takes part in the excretion, and the calcium is excreted as inorganic salt; (3) at a fixed, higher concentration of calcium in the blood, the kidneys are thrown out of action and all the excretion is performed by the intestine, until a point is reached where the quantity in the blood is again brought below the toleration point, when the kidney again takes on its excreting function; (4) if the concentration in the blood is greater still, the calcium is excreted also as calcium soap by the intestine; (5) the excretion of large quantities of calcium through the intestinal walls has an astringent action, and causes diminished action and paresis of the intestinal movements. The feces cease to be excreted so freely, and, if more calcium arrives into the blood, the increased concentration of the calcium ion produces spontaneous intravascular clotting and death; (6) the calcium "toleration point" of the blood, above which the kidneys are unable to act, can be raised by injecting increasing doses of calcium chloride into the blood, provided time is given for the animal to complete the excretion of one injection before the next is given. This action appears to extend the theory of immunity into the inorganic world, and shows that the body can react to calcium salts much in the same way that it reacts to an organic toxin.

*The Non-coagulability of Catamenial Blood* having been proved by W. B. Bell<sup>1</sup> to be due to the absence of fibrin ferment, clotting would imply definite lesions of the endometrium to account for the escape of the fibrin ferment or of its factor.

B. *The "Circulatory" Factors, Physiological and Pathological, in the Arrest of Hemorrhage* are the other practical aspect of the question. To this C. J. Wiggers<sup>2</sup> has devoted a searching analysis. To mention only one of its salient points, he attributes to the "depth of respiration" a prominent share in determining maximal blood-pressures, both systemic and pulmonary, which would favor hemorrhage; and a corresponding value to any agencies, spontaneous or therapeutical, which might lessen the hyperpnea.

C. *The Blood Platelets in Hemophilia* are not numerically inferior (the normal count is about 350,000); but only qualitatively. They are incapable of hastening the clotting in any "hemophilic" blood; yet in "normal" blood they will hasten it conspicuously. Therefore there is, in the hemophilic blood, no lack of thrombogen, but only of platelet-efficiency. Those are the conclusions dervied by Fonio<sup>3</sup>

<sup>1</sup> British Medical Journal, March 13, 1915.

<sup>2</sup> Arch. Int. Med., July, 1914.

<sup>3</sup> Mitt. a. d. Grenzgg., vol. xxviii, No. 2.

from his research. He contrasts with these features the efficiency of the platelets by their greatly reduced number in the blood of the "purpuric" group.

D. *Anaphylactic and Apotoxic Intoxication and the Blood Platelets.* E. von Behring<sup>1</sup> sums up the results of the last four years' work at Marburg. Unknown changes in the platelets or their medium cause them to clump and to obstruct the smallest vessels. This, in the brain, determines anaphylactic shock. He proposes for them the name of "thrombocytes," on the strength of his having succeeded in producing from them an agglutinating and clotting substance, so powerful that the addition of 1 part of it to 40,000,000 parts of a fibrinogen mixture will coagulate the latter.

E. *Blood Platelets in the Treatment of Disease.* In his Preliminary Note, LYN Dimond<sup>2</sup> describes three therapeutical methods: (1) By the parenteral administration (to reinforce antibacterial resistance) of a preparation of the supply obtained from a perfectly sound and tested donor; this he has proved to be rich in antibodies, as well as efficacious against hemorrhage; (2) by systematic vicarious vaccinations of a healthy friend from an isolated specific organism, to render his serum highly efficient antibacterially; and by the subsequent remedial administration of his platelets with their plasma; and (3) by "sensitizing," by means of the platelets and their plasma, the vaccines obtained by isolating the organisms from the patient's lesions. For all technical details, the original should be consulted. The results have been striking. Their clinical description will be published.

F. *Tissue-Extract as a Hemostatic.* In a "preliminary report," Alfred S. Hess<sup>3</sup> has obtained remarkable results in two boys of pronounced hemophilic type. In one of them the oozing of blood had continued for four days, unchecked by fibrinogen, pure thrombin calcium solution, gallic acid, serum, and coagulose. It immediately stopped when the "thromboplastin" was applied; and likewise in the other case. The tissue-extract (for which he suggests that name) was made, in the first instance, from a uterus removed by operation and used without delay. The question remains whether it will be efficacious in purpura, which is characterised, not by any considerable delay in coagulation, but by a decrease in platelets.

3. HEMOLYSIS. *The Non-saturation of the Fatty Acids.* J. H. King<sup>4</sup> has studied the "Pathology of the Spleen" in the results of splenectomies in healthy animals, and in hemolytic clinical affections (pernicious anemia, hemolytic jaundice, catarrhal jaundice, and some hepatic cirrhoses). Hemolysis seems to run parallel with "non-saturation of

<sup>1</sup> Deutsch. med. Woch., October 8, 1914.

<sup>2</sup> British Medical Journal, November 14, 1914.

<sup>3</sup> Journal of American Medical Association, April 24, 1914.

<sup>4</sup> Arch. Int. Med., August 15, 1914.

the fatty acids of the blood, and with their higher "iodine-number" or combining coefficient with iodine. Splenectomy reduces the Iodine-number; and it increases the "total fats and cholesterin." This would mean that the spleen possesses definite chemical activities, which, when exaggerated by suractivity, would produce hemolysis, anemia, and icterus by increasing the non-saturation as a factor of hemolysis and by diminishing the total of saturated fats and cholesterin which stand for antihemolytic factors. In "experimental asplenism," animals become more resistant to hemolyzing agents, and icterus more difficult to produce. This reads confirmatory of a protective influence for red cells from a full supply of fats and cholesterin in the blood.

*The Case of Congenital Hemolytic Jaundice with Splenomegaly* recorded by J. P. McKelvy and J. Rosenbloom<sup>1</sup> is another important contribution to the Pathology of the Blood.

*Asbestos, a Hemolytic Agent.* S. Wyard<sup>2</sup> finds that the natural fibre removes amboceptor and complement with great rapidity and at the same rate. But, after any treatment, it removes the complement at a greater rate than the amboceptor. Normal saline diminishes its power until dried off.

**III. Hematopoietics and Hematobiotics.** A reviewer of Gilbert and Weinberg's vol. 1 of their *Traité du Sang* points out that while contending for an essential unity of all the blood-forming organs, including the lymphatic tissues, they do not refer to the fact that in leukemia the liver shows constant evidence of its having resumed the fetal function of blood-cell formation.

**BLOOD-DUST AND HEPATIC DIAGNOSIS.** Jeannin and Levant<sup>3</sup> applied the alimentary lipemia test in two cases of puerperal jaundice. In the severe and fatal case the hemoconia were almost absent; in the milder one, greatly diminished. O. Weltmann<sup>4</sup> states that the decrease or the absence of the normal hemoconia, two, three, or four hours after the butter test-meal (50 grams of butter on bread), is due to failure of the hepatic function; and that it is as significant as are clay-colored stools of a more or less complete biliary obstruction. Concerning the latter, he seems to have overlooked the fact that those colorless stools are not deficient in "bile;" it is only the "pancreatic" secretion that is kept from them.

**A CASE OF FAT EMBOLISM** (of the thorough von Recklinghausen type) fatal on the third day after fracture, by capillary plugging in brain, kidney, heart, etc., is described by Nicolai.<sup>5</sup> He states that the foramen ovale was *not* patent. The fat must have passed through the

<sup>1</sup> Arch. Int. Med., February, 1915, xv.

<sup>2</sup> Journal of Pathology and Bacteriology, April, 1914.

<sup>3</sup> Arch. Mens. d'Obst. et Gyn., April, 1914.

<sup>4</sup> Wien. klin. Woch., July 9, 1914.

<sup>5</sup> Nederland. Tijdschr. v. Geneesk., November 14, 1914.



lungs. His histological examination of the lungs from 57 autopsies in which there was no suspicion of any skeletal disease or trauma, revealed, in 8 of them, quite apart from mere blood-dust, considerable amounts of fat in the pulmonary capillaries, sometimes in elongated shapes like plugs or strings. Fat had also been found in the lungs by Florunoy and by Scriba, in all sorts of diseases.

**IV. Hematotherapy; Authemotherapy, and Transfusion.** 1. SUBCUTANEOUS HEMATOTHERAPY by whole blood injections through a sterilized and petrolated 20 c.c. syringe, is advocated for persistent hemorrhages by A. H. Curtis. Its systematic use might prove more helpful in chronic anemias, wastings, and infections, than a single, or even two large transfusions.

2. AUTHEMOTHERAPY: THE AUTOTHERAPY OF INFECTIONS BY BLOOD OR SERUM INJECTIONS. B. Spiethoff<sup>1</sup> confirms his previous good results in eczema and itching dermatoses. He claims for the method as much efficacy as belongs to simple serotherapy; but without its dangers of anaphylaxis or of infection.

The rapid recovery, from an *endocarditis streptoc. virid.*, of Robert Abrahams<sup>2</sup> patient, aged twenty-two years, after three daily 20 c.c. injections of her own serum is so suggestive of a "cure" that he pleads for further trials in like infections.

A new technic for this method is described by Harry Koenigsfeld<sup>3</sup> who believes in its applicability to any infectious disease. He claims definite success from it in typhoid fever.

3. TRANSFUSION. *A Simple Method for the Indirect Transfusion of Defibrinated Blood* has been practised by Moss<sup>4</sup> in some 75 cases. *A New Method and a New Syringe* have been devised by Lester J. Unger,<sup>5</sup> for which great efficiency is claimed. Lewisohn has used successfully, for two transfusions (one of 300 c.c., another of 500 c.c.), a very simple and rapid device,—that of mixing the blood in a glass jar, on its way from the donor, with 5 c.c. of a 10 per cent. sodium citrate solution, and then pouring it into a glass funnel connected with the injecting cannula.

*The Use of Herudin in the Transfusion of Blood* is described by Satterlee and Hooker<sup>6</sup> in their third report on their experimental investigation in quest of some improvement in our transfusion methods. They find that about 3.5 mg. of herudin (for 100 c.c. of blood) would be requisite for the ordinary performance; and that the coagulation delay then varies from seven to fifteen minutes. But, with a paraffin coating to the tip and neck of the pipette, half this amount (*i. e.*, 7.5 to 1.8 mgms.

<sup>1</sup> Med. Klin., January 19, 1915.

<sup>2</sup> New York Medical Journal, December 19, 1914.

<sup>3</sup> Münch. med. Woch., February 23, 1915.

<sup>4</sup> American Journal Medical Sciences, May, 1914.

<sup>5</sup> Journal of American Medical Association, February 13, 1915.

<sup>6</sup> Ibid., June 6, 1914.

only) was sufficient, while the delay was increased twofold—the gain in herudin-efficiency being thus fourfold.

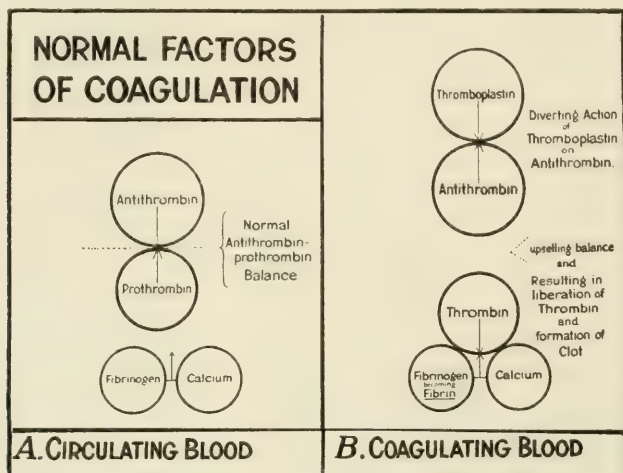


FIG. 2

The first of their graphic diagrams, Fig. 2, illustrates Howell's theory of coagulation. In *B* the advent of thromboplastin binds the anti-

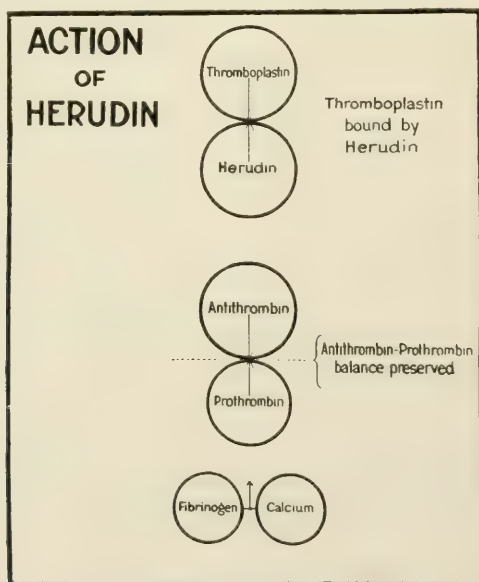


FIG. 3

thrombin; and it liberates thrombin, which combines with fibrinogen and calcium to form fibrin. Fig. 3 shows its superior affinity for herudin,

which binds it, and in that way maintains the antithrombin-prothrombin balance.

**V. Leeching, Blood-letting, and Cupping.** 1. LEECHES have never been out of date, though sometimes, as in later years, forgotten. With our increasing knowledge and treatment of the blood they are likely to be in increasing request. Dr. Shipley, the Master of Christ's College, Cambridge, has taken alarm at the recent invasion by the war of some of the best leech-areas in Europe, and has succeeded in obtaining from India a consignment of the Indian leech *Limnatis Granulosa*, different in genus and species, from *Hirudo Medicinalis*; of greater length (up to 13 inches); and capable of drawing from patients from 4 to 6 drams of blood,—with perfect safety as it would appear from their current use in the East.

In connection with the therapeutics of leeching it may not be irrelevant to suggest some investigation into its "sedative value," and into any which might conceivably dwell in hirudin itself.

2. THE PRESENT POSITION OF VENESECTION is discussed by Rudolf.<sup>1</sup> His own method is to puncture the vein, through the skin, with a 2 mm. needle; and to slip over the latter a rubber tube filled with water and conducted into the bleeding cup. This is a means of quickening the flow by a negative pressure capable of variation. Among the "indications" he enumerates: (a) Cyanosis, from heart failure, acute or chronic; (b) acute toxemias, such as acute uremia; (c) acute infections, such as typhoid fever and pneumonia; (d) chronic toxemias, especially those with high blood-pressure; (e) it may also occasionally be used, to increase the coagulability of the blood, in deep hemorrhages, and in aneurysm.

A *New Phlebotomy Tube* devised by W. Spielberg<sup>2</sup> is graduated into 10 c.c. divisions, for accurate measurement. An upper outlet provides for suction if this should be necessary—and being stopped by the thumb when the apparatus is removed from the vein, secures perfect neatness and cleanliness. The technic is so simple that there is no loss of time or need for any assistance.

3. CUPPING IN NORTHERN NIGERIA. The native barber makes six small incisions, places the horn over them, sucks the air out, and dabs a piece of wet clay on the end. This report is from Leslie Doudney<sup>3</sup> who has often seen carriers on the march having their painful swellings in the muscles of the back or legs cupped, and go on again with a sixty pound load for many miles quite free from pain.

**VI. The Medical, Physical, and Surgical Control of Blood Affections.** THE DRUG TREATMENT OF BLOOD DISEASES is reviewed by P. Morawitz,<sup>4</sup> to the effect that iron is futile in pernicious anemia. Benzol

<sup>1</sup> Canada Medical Association Journal, April, 1914.

<sup>2</sup> Medical Record, February 20, 1915.

<sup>3</sup> British Medical Journal, March 20, 1915.

<sup>4</sup> Therap. Monats., June, 1914.



does not cure leukemia permanently; and has greater risks than the  $\alpha$ -ray. Thorium cured a case of acute leukemia under his observation. Calcium, having been found to diminish the permeability of the vessel wall, is indicated in infective leukemia, and in any anemic tendencies to hemorrhage; but is powerless against that of phthisis. F. Göppert's<sup>1</sup> paper on calcium salts mentions a beneficial effect on the tendency to asthma or hay fever, but markedly on the spasmophilia or latent tetany of children which he has successfully treated with large and frequent doses of the chloride, to be kept up for some time with diminishing frequency.

**SPLENECTOMY IN IDIOPATHIC SPLENOMEGALY.** A man, aged twenty-three years, the subject of considerable splenic enlargement, which was attributed to a fall out of bed at the age of seven, was splenectomized by A. E. Sellenings<sup>2</sup> with complete relief to the symptoms.

**THE CHRONIC AND LATENT POLYCYTHEMIAS.** I. Hedenius's<sup>3</sup> recent review includes 19 original cases, in 10 of which the over-working of the bone marrow was not obviously manifest clinically, and might almost have been regarded as within the "physiological" boundary. Eight of his cases were of gouty tendency, suggesting that the chronic affection might be, like gout, obesity, and diabetes, of a constitutional type, and perhaps under suprarenal influence. He cannot point to any definite line of "permanent" therapeutic efficiency. Benzol may be of use in some cases, as McLester obtained a reduction to normal after its administration for six months in daily doses of 3 gm.

**THE BENZOL TREATMENT OF LEUKEMIA** has been widely reported and discussed, but, in spite of successes, it is still open to perplexing doubts. Under the heading of "Aleukemia and Leukemia," B. Stein<sup>4</sup> points out a telling and essential distinction as to the reaction of patients to benzol or arsenic, according as they may, or may not, be the subjects of "complete exhaustion of the blood-making apparatus." This suggests the possibility of some future differential guide. It also justifies G. Kiralyfi's<sup>5</sup> recommendation of defibrinated blood for intramuscular injection where the benzol or  $\alpha$ -ray treatment may have been overdone. J. M. Jackson and W. D. Smith<sup>6</sup> describe a transient "lymphatic leukemia," infective (from tonsillitis), which occurred in a young man four years after his splenectomy.

**RÖNTGEN-RAYS IN SEVERE ANEMIAS.** In the *Archives des Maladies du Cœur*, C. Aubertin (Sept., 1914) has a paper on "Visceral Siderosis." He also reports the observation, in the case of the röntgenologist Tira-

<sup>1</sup> Med. klin., June 14, 1914.

<sup>2</sup> New York Medical Journal, June 20, 1914.

<sup>3</sup> Svenska Läk. Handl., 1914, vol. xl, No. 3.

<sup>4</sup> Med. Klin., February 28, 1915.

<sup>5</sup> Wien. klin. Woch., July 30, 1914.

<sup>6</sup> Boston Medical and Surgical Journal, January 28, 1915.

boschi, of an unexampled degree of splenic atrophy with iron pigmentation, pointing to the x-ray production of a special form of pernicious anemia. In conjunction with H. Vaquez, he further reports (Dec., 1914) upon the radiotherapy of severe anemia from chronic CO poisoning, and of one from profuse hemorrhage, treated as for myeloid leukemia by very mild exposures. The satisfactory results in these and other cases, and the failures in advanced cases, suggest that the beneficial stimulation of the marrow by small dosage resembles that of arsenic; that benefit can be expected only when the marrow is still capable of responding to it; and that the outlook should be determined by repeated blood examinations during treatment.

**PERNICIOUS ANEMIA.** The conclusion arrived at by G. P. Chosroeff,<sup>1</sup> from his 35 cases of pernicious anemia, is that there are three clinical forms: Turk's recurrent form, the acute form, and the aplastic; that there is no specific remedy; spontaneous remissions are frequent, and more so among those no longer young.

*Splenectomy in Pernicious Anemia*, and in kindred ones is advocated by Roblee,<sup>2</sup> who believes in its clinical and blood healing efficacy, in its innocuity in health or disease and its success in Banti's disease. The etiology is probably "xenotoxic" (if we might coin that term) rather than "autotoxic"; it is coupled with splenic hyperemia and hyperchemism which loads the blood, as he suspects, with unsaturated fatty acids and starves it of antihemolytic cholesterins and fats. He refers to cases still faring well clinically after nine months, though still with imperfect blood. Splenectomy has also been recorded as relatively successful by various observers. R. Dahl, and others, suggest that it eliminates an important factor, though probably not the primary cause.

*Spleen-extract Injections* (2.5 c.c. of a 2 p.c. solution of the extract) are recommended by M. P. Mikhailoff.<sup>3</sup> He records one case as a "cure," and also had good results in two out-patients, which were probably attributable to "hormones for the blood-making organs."

*Large Transfusions of Blood (Preferably from a Polycythemic Donor)* have been practised by A. Plehn<sup>4</sup> in a series of cases, mostly of pernicious anemia, with encouraging results; and with truly good results in the less severe anemias. He has not observed any tendency to anaphylaxis. In the discussion<sup>5</sup> on "Transfusion" the conclusion was favored, as regards its use in pernicious anemia, that it ought to be tried "before" splenectomy.

## VII. The Cardiovascular Function. CARDIOVASCULAR MECHANICS.

*L. Jacquet's Biokinetic Method by Postural Ischemia* for frozen feet, by

<sup>1</sup> Russky Vrach, vol. xiii, No. 28.

<sup>2</sup> Journal of American Medical Association, March 6, 1915.

<sup>3</sup> Russky Vrach., June 27, 1914.

<sup>4</sup> Berl. klin. Woch., November 30, 1914.

<sup>5</sup> New York Academy of Medicine, December 17, 1914.

keeping them (or frozen hands) raised, and causing the patient to gradually move the joints more and more at successive sittings, is much lauded by F. Debat,<sup>1</sup> and has been widely adopted by others.

A. S. McNeil<sup>2</sup> suggests for the trench-post trouble the alternate name "water-bite," pathological osmosis arising from local denudation of the cutis by rubbing off of the soddened horny layers. The best substitute for the largely suppressed sebum, and the best preventive protection and heat preservative, is an ample supply of the most penetrating grease—that from the goose.

W. C. Davis's<sup>3</sup> successful treatment for "non-ulcerated" feet is as follows: Rub the feet twice daily and massage for a few minutes, and afterward wrap up in cotton-wool with a small quantity of cocainæ, gr. viii; ol. olive, ℥iv; liquor calcis, ℥iv. An improvement is to add 1 oz. of liquid paraffin to 4 oz. of this carron oil, to prevent it oxidizing and drying up so quickly. When the oil dries on the feet, the following should be dusted on: Camphor, gr. xxxv; zinc oxide and pulv. amyli, āā ℥ss. A great advantage is that the patient sleeps without any narcotic. After the acute stage, mix the carron oil with equal parts of carbolic oil, increasing this as the pain decreases.

**VIII. The Cardiorespiratory Organomechanics.** THE OXYGEN PULSE AND THE SYSTOLIC DISCHARGE. According to Y. Henderson and A. L. Price<sup>4</sup> the magnitude of the discharge might be measured from an estimation of the oxygen consumed by the body per discharge, by dividing the oxygen absorbed in a minute by the number of heart beats. The value thus obtained is the "oxygen pulse." Measurements of the pericardial capacity show that the maximum systolic discharge which its size permits is much in excess of any that the heart may be ever supposed to make. Applying their method under varying conditions, they arrive at larger figures than previous workers; about twice as large as some given in current literature. They infer that in a well grown laborer at hard work (140 pulsations per minute) the left ventricle would discharge not less than 100 c.c. ( $3\frac{1}{2}$  oz.); at slow rates, 150 c.c. (5 oz. or more). The whole "tidal volume" for each complete cardiac cycle might therefore rise as high as 500 c.c. ( $16\frac{1}{2}$  oz.). On the other hand their pericardial measurements had ranged (according to physique, etc.) from 350 up to 700 c.c. (23 oz.).

"HEART FILLING AND EMPTYING, IN WORK AND AT REST," is the title of another experimental investigation of the same question by G. F. Nicolai and N. Zuntz,<sup>5</sup> by means of an ingenious combination of a special treadmill and of serial x-ray photographs of the heart, (a) before, (b) during, and (c) after work. In one subject the three figures

<sup>1</sup> B. Ac. de Méd., January 12, 1915.

<sup>2</sup> British Medical Journal, April 24, 1915.

<sup>3</sup> Ibid., March 27, 1915.

<sup>4</sup> American Journal Physiol., 1914, xxxv, 106.

<sup>5</sup> Berl. klin. Woch., May 4, 1914.



arrived at for the diastolic content in that sequence were 280 c.c., 310 c.c., and 220 c.c. They explain the difference between (a) and (c) on the assumption that, while exertion increases the content, it also leads afterward to a "complete" emptying. This, they state, never does occur at rest or in ordinary activity.

*Respiratory Irregularities and Periodic Breathing in Heart Disease*, being due, according to G. H. Hoxie,<sup>1</sup> to the "vascular" damming pressure, to the "medullary" O-want, and to the "blood" acidosis, are important indications for therapeusis by nitrites, or digitalis and pituitrin, by oxygen, and by alkalies.

### THE AFFECTIONS OF THE HEART.

**The Pericardium.** THE THERAPEUTICS OF PERICARDITIS. The physiology of our joints is "movement"; likewise that of our pericardium, only the movement in it is perpetual. Their pathology, too, is similar. In both, our therapeutics have to deal with effusions or adhesions. We can immobilize the joints for treatment, but we cannot stop the heart. These views are the introduction to R. S. Wilbur's paper,<sup>2</sup> not the least instructive section of which is allotted to his experimental inquiry in conjunction with E. C. Dickson and E. G. Cary, as to how the pericardium reacts to varied injections in the terrapin and in rabbits. In rabbits, when surviving the injection of tincture of iodine (100 per cent.), congestive fibrinous inflammation and adhesions, and some superficial myocardial round-cell infiltrations resulted; after a 50 per cent. injection, only slight effusion, adhesions, and opacities; but, after injections of less than 25 per cent. strength, there were no signs of pericarditis. In another set, 0.5 c.c. oil of turpentine was injected, with only slight pericardial reaction, and slight fibroid deposits in the auricular and ventricular walls. In a third set, bacterial injections were made. Their results are discussed in comparison with those of other experimenters. In the clinical section, under diagnosis, Wilbur draws attention to the occasionally rapid disappearance of the signs of pericarditis. This is consistent with the well-known fact of the rapid absorption of soluble agents, such as iodine, from the pericardium. He is in favor of an early aspiration (preceded by an exploratory puncture with a subcutaneous syringe) preferably in the fifth interspace, 1 inch inside the absolute dulness. He does not advise any attempt at any "remedial" injections. On the strength of the favorable results of Brauer, Delagènière and others, he thinks that cardiolysis should be more often practiced.

*Dorsal Tapping for Large Pericardial Effusions.* In M. O. Moog's<sup>3</sup> patient, severe lung-pressure symptoms were present; but several

<sup>1</sup> Mississippi State Medical Journal, October 14, 1914.

<sup>2</sup> Journal of American Medical Association, July 25, 1914.

<sup>3</sup> Therap. Monats., June, 1914.

left anterior aspirations brought away but little fluid. The eighth interspace was then punctured in the back on two successive days, and again five days later, with a total output of 1600 c.c. Pneumothorax, with slight effusion, developed on the last occasion, but did not prevent a complete recovery. Curschmann had previously recorded four cases of dorsal tapping. The likelihood of wounding the lung is great owing to its spinal angle being closely tethered to the spine and diaphragm by the ligamentum latum.

*Cardiolysis.* In connection with the two successful cases reported in his paper on "Adhesive Pericarditis," P. F. Holst<sup>1</sup> points out that the operation benefits those symptoms only which are directly induced by the adhesions; not those due to myocarditis, cirrhosis of the liver, or "iced" or congestive peritonitis.

**The Heart.** I. ETIOLOGY. *The "Cardiopathic" Question at the Front* is a much wider one than the "tubercular." The fitness of cardiopaths for the fighting line is only one aspect of it. C. Fiessinger,<sup>2</sup> who recommends small intermittent doses of digitalis as a preventive of sudden dilatation, connotes the observation that the primarily "valvular" cardiopaths resist better under active service than the primarily "myocardial" subjects.

*The Four Common Types of Heart Disease*, from an analysis of 600 cases by Richard C. Cabot,<sup>3</sup> are the Rheumatic (streptococcic), the Syphilitic, the Arteriosclerotic, and the Nephritic (or nephrogenic). His "exclusions," or outstanding groups, are (a) the "goitre hearts," showing no cause for weakness except thyreogenic intoxication; (b) the "obese hearts," decompensating without any registrable toxicosis; (c) myocardial failures without any known cause—had any such occurred in athletes or ex-athletes they might have been called "athletes' hearts"—but they did not.

There is obvious utility in so competent a "sorting" of so adequate a supply. The sorter would be the last to overlook its inevitable limitations; and the fact that the heart, our central motor, though it is not the Hamlet in every pathological drama, can never play an inferior part in any. In the least of our episodes it never fails to be a directive and a reflective agent. It is ever bending under the burden of life, whether physiological or pathological. At each of life's stages the heart contains the vital summation of all past stresses, and the future vital moulding of all those yet to come. It can never be "appropriated" to any affection as its exclusive maker or sufferer—as is so well demonstrated in the "outstanding group." Is it not, as of everything else, chief manufacturer of the arteriosclerosis which cripples and destroys it? Yet, how indispensable for our grouping therapeutics—*rerum*

<sup>1</sup> Norsk Mag. f. Laeger, October, 1914.

<sup>2</sup> Bull. Acad. d. Méd., December 29, 1914.

<sup>3</sup> Sixth Annual Session of the American Medical Association, 1914.

*cognoscere causas*; and to dissect the mobile realities of living things into the inert unrealities of a conventional nomenclature which is, for our practical "healing" tactics, our only means of access to the main point for attack. Well might we ponder Cabot's conclusions which are as follows:

(1) 93 per cent. of 600 recent hospital cases of failing heart group themselves without much resistance into those four classes. (2) About 5 per cent. cannot easily be thus classified. The remaining 2 per cent. are "goitre" hearts. (3) In the 278 rheumatic cases, females predominate; 170, or 61 per cent., to 108, or 39 per cent. (4) 60 per cent. of these began before the twenty-second year. The typical rheumatic heart patient is, therefore, a young girl. (5) Of the 74 syphilitic hearts, 70 per cent. were in men; only 30 per cent. in women. The typical syphilitic heart patient is a middle-aged man (average age, forty-seven years), with aortic regurgitation and no rheumatic history. (6) The 93 arteriosclerosis patients averaged fifty-nine years of age. The 117 glomerulonephritic patients, thirty-six years. The arteriosclerotics are, therefore, twenty-three years older than the nephritic. The sexes are about equally represented in both. (7) Diagnosis, prognosis and treatment are put on a more rational basis if we either give up the terms "myocarditis," "cardiorenal" disease, "aortic regurgitation," "mitral regurgitation," or qualify them with an adjective as "syphilitic," "rheumatic" or "arteriosclerotic." (8) Practically all the stenoses belong in the rheumatic group.

*A Primary Syphilis of the Heart*, congenital or acquired, and due to a parenchymatous or to an interstitial invasion of the spirochete, is held responsible by A. S. Warthin,<sup>1</sup> from the frequency of his detection of it, for most of our clinical endocardial and myocardial disease. The heart seems to be a seat of election for the parasites, in preference to the liver and apparently to other organs. He has sometimes traced them there in great numbers when not to be found elsewhere.

"Dental" *Septicemia and Endocarditis*, the worst of many evils attributable to dental neglect, should invite adequate measures of safety. Our belated recognition of those avoidable dangers is responsible for another evil, too prevalent of late years, the wholesale removal of healthy teeth under the mistaken impression that this is the only cure for pyorrhea alveolaris. Eugene S. Talbot's<sup>2</sup> letter opportunely calls renewed attention to the whole subject of pyorrhea dentalis and alveolaris. Within recent months a patient of mine, now cured after suitable intra-alveolar injections, narrowly escaped having a splendid set of sound teeth extracted under professional advice.

*The Incidence of Heart Disease in Children* is an important item in the Sixth Annual Medical Report of the Board of Education. In

<sup>1</sup> American Journal of Medical Sciences, May, 1914.

<sup>2</sup> Journal of American Medical Association, March 13, 1915.



London, "valvular lesions and other defects of the heart" were reported in 4336 cases (2.2 per cent. of the children examined). The incidence rose from 1.5 per cent. among entrants to 3 per cent. among leavers; girls being more frequently attacked than boys.

*The Mobile Heart* is identified as a characteristic result in Glénard's disease by Otto Lerch,<sup>1</sup> who generalizes the view that splanchnoptosis is the pervading cause of hysteria, neurasthenia, and visceral neurosis, despite any negative postmortem findings, which are usually preceded by a prolonged decubitus favoring rectification of site. That the heart level, in the standing posture, is affected by genuine "dropped bowel" there can be no question. He believes, however, that this is much more prevalent than suspected. Glénard estimated that 90 per cent. of all patients seeking the physician's advice were gastropototic or enteroptotic neurasthenics; and that his syndrome included hysteria, unclassified psychopathies, and the visceral neuroses. Lerch's analysis of his own 2700 private patients for ten years gives him precisely the same percentage. Weir Mitchell had supplied the efficient treatment "without" diagnosis. Happily the continued rest cure, inaccessible to so many, is not indispensable for all. But all should be treated on the same lines as for consumption; by prolonged diurnal recumbencies and by tonic measures, while avoiding, because the affection is chronic, the long continuance of any drug, except perhaps arsenic (particularly in its organic compounds), which he regards as the most rational of all drug indications. Lerch's fundamental conclusion is that spinal abnormality is the root of the evil. It induces the circulatory disturbances which variously determine hysteria, neurasthenia, or the visceral neuroses. His two clinical types might be familiarly described as the "lanky" and the "podgy;" too little relative strength in the one, too much relative weight in the other. His own definition of them is, in terms of their spinal etiological contrast, the "paralytic" and the "lordotic" type—the opposite features of which are graphically described.

*Cardioptosis*, as pointed out by Rummo,<sup>2</sup> often underlies "neurasthenia" or "erethism" of the heart. He refers to a "leftward" dropping of the heart; and to a special "atonic" form, presumably predisposed congenitally, in which the heart "reclines" upon the diaphragm at a low level owing to a relaxation and elongation of the suspensory fibers of the aortic arch, and of the aorta itself, a condition of great therapeutical significance.

*A Congenital Cardiac Asthenia* is conceived by C. L. Greene<sup>3</sup> to underlie a tendency to cardioptosis, to visceroptosis, and to dilatations short of any incompensation. Being amenable to rest and digitalis,

<sup>1</sup> New York Medical Journal, December 19, 1914.

<sup>2</sup> Rif. Med., January 14, 1915.

<sup>3</sup> New York State Medical Journal, August, 1914, vol. xiv.

it is diagnosable by the therapeutic test. Undiagnosed and untreated, it might contribute the major section of chronic invalidism, by determining neurasthenic and dyspeptic symptoms in those lowered by malnutrition or infections; for dropped heart, apart from dilatation, need develop no active symptoms in level health; neither need any arise from congenital asthenia under favoring circumstances. Greene's conception is a clinical presentation of the basal fact that the heart makes the man. His *primum movens et faber*, it is the first expression of his germinal energy and of its individual type; though itself dependent, for the fulness of its constructive work, upon the maternal pabulum and oxygen.

*Deficiency of Sodium Chloride in Neurasthenia.* In support of his view that neurasthenia is sometimes associated with a defective circulation in the brain and great nerve centres due to cardiac weakness, Alexander Haig<sup>1</sup> argues that any chronic underfeeding or starvation will cause muscular weakness, eventually affecting the heart. Deficiency of salt in the body is a species of underfeeding, because productive of ever-increasing failure in the digestion and absorption of food, till the nutrition of all muscles is impaired.

*An Additional Muscular Path between Auricle and Ventricle* has been identified experimentally by A. F. S. Kent,<sup>2</sup> namely, an undescribed mass of nodal tissue in the right lateral wall of the heart. It is important to note that Naish<sup>3</sup> has published tracings from a case of acute heart block which could not be explained, except by the assumption that the impulse does not pass to the ventricle through the auricle, but by a separate path.

*The Distensibility of the Ventricular Wall*, which lessens with age, is regarded as a central factor by Stacey Wilson in his book on the "Early Diagnosis of Heart Failure," etc., 1915. His views are well known as to the diastolic expansion of the ventricle being a true muscular effort; and as to the production of a "third sound," audible, in some cases, at the apex region.

*The Mechanism of the Mammalian Ventricular Valves* is the subject of an important contribution from A. F. S. Kent.<sup>4</sup> Muscular fibers from the auricular wall are found to run for a considerable distance within the flaps, chiefly toward their auricular surface. Being an extension from the base of the auricle, their contraction would begin, and also last, latest. The function of these muscular slips might be: (a) To keep the flaps away from the ventricular walls, and provide adequate space for the full development of the retrovalvular eddy; and (b) to assist in raising the flaps into the position of final closure.

<sup>1</sup> Medical Record, June 6, 1914.

<sup>2</sup> British Medical Journal, July 18, 1914.

<sup>3</sup> Cf. Journal of American Medical Association, November 7, 1914, p. 1702.

<sup>4</sup> Royal Society, May 11, 1915.

*Auricular Fibrillation* continues to be a fascinating electrocardiographic study. A "paroxysmal" case is carefully analyzed by Robinson,<sup>1</sup> who traces a relation to tachycardia. Some important conclusions have been derived by C. J. Wiggers<sup>2</sup> from his experimental study of the pressure changes in auricles, ventricles, and aorta by means of optically recording manometers of high vibration frequency. His contribution to the "pathological physiology" of the heart should be read in the original.

*Auricular Fibrillation and the Sinus Node.* Changes in this node were first described by Hering (1908) in association with fibrillation or flutter of the auricle and a "pulsus irregularis perpetuus;" a few only out of a multitude of fibrillary contractions reaching the ventricle through the bundle of His. The node is situated in the angle between the superior cava and the right auricle; its interwoven fibers (resembling muscle) extending into both structures. An editorial review<sup>3</sup> of the etiology of fibrillation points out that trustworthy observers have frequently failed to identify any nodal lesions to account for its presence. While "nodal" alterations may produce it, they are neither constant nor indispensable.

*A Classification of Paroxysmal Tachycardias* is suggested by E. Donzelot<sup>4</sup> into the regular or total type; the partial, or auricular flutter; and the irregular, or arrhythmic type. These may blend, or sometimes evolve serially in a fatal progression.

*Acute Rheumatic Heart-block.* In Gosse's<sup>5</sup> cases, one of tonsillitis with numerous rheumatic nodules, the condition lasted eighteen days. His inference is that a round-cell infiltration probably settled upon the bundle of His.

*Angina and Sudden Death.* H. Walter Verdon<sup>6</sup> connects a definite variety of precordial pain and sudden death with an inherent predisposition or predisposing change in the central nervous system rather than with any primary myocardial degeneration. The peripheral patches of pain or tenderness (*e. g.*, in the brachial plexus or nerves) as well as the heart seizures are both determined by "neurosis of the segmentary centres" down to the ninth, tending to the production of paroxysmal spasms of the digestive tract musculature, of abnormal salivary and lachrymal flow, of parietal muscular contractions with the sensation of pressure and constriction, of visceral events down the gastro-esophageal sheet and diaphragm, such as nausea, retchings, and eructations, and of cardio-arterial muscular contractile events, of disturbances of rhythm, and sometimes total inhibition of function. He

<sup>1</sup> Arch. Int. Med., February, 1915.

<sup>2</sup> Ibid., January, 1915.

<sup>3</sup> Journal of American Medical Association, March 13, 1915.

<sup>4</sup> Arch. méd. du Cœur, November, 1914; *cf.* Journal of American Medical Association, February 6, 1915.

<sup>5</sup> British Medical Journal, June 20, 1914.

<sup>6</sup> Lancet, April 3, 1915.



infers that a state of neurosis at segmentary centres is the predisposing cause of seizures, and that vagal inhibition is the cause of death, though the heart need not be diseased. He believes that segmentary neurosis is also the predisposing cause in other spasmodic paroxysms connected with the musculature of the alimentary canal.

In a later note he<sup>1</sup> remarks that muscular exertion excites paroxysms of pain, not only in angina, but in a set of spasmodic affections pathologically well-defined as "segmentary neuroses," namely: The trismus of tetanus, the palatopharyngeal spasm of hydrophobia, esophagismus, gastrismus, enterospasm, biliary and renal colic, colismus, tenesmus, strangury and uterine spasm"—the spasm in some of them being reduced by nitroglycerin. If we include angina in that set, as suggested by Heberden, a rational explanation is at hand for its every phase and symptom.

*Chronic Tobacco Poisoning.* Fayarger's<sup>2</sup> exhaustive experimental and clinical study identifies the toxic effects with the nicotine. Many cases of myocardial trouble (probably by fatty degeneration), are free from any signs of arteriosclerosis. The latter is common in nicotine poisoning, but not as universal as often assumed. Harlow Brooks's<sup>3</sup> important paper on the "Tobacco Heart" contains many practical teachings, in addition to urging that the essential for a cure is total abstaining. There is no evidence that coronary sclerosis may be caused by the poison; though this does accentuate its symptoms. Tobacco angina is promptly relieved by discontinuation; angina pectoris, never. "Acute" poisoning kills by its vagus effects. "Chronic" poisoning presents two definite vagus effects: At first an increase in the pulse-rate and in the blood-pressure; afterward a fall in both. They quickly disappear after cessation. Prolonged excess induces arrhythmia and intermission, with oppression or dull pain at the heart, and these are likewise amenable.

*Ventricular Fibrillation "the Cause of Death" under Chloroform.* A. Goodman Levy<sup>4</sup> criticizes adversely the clinical and experimental observations of John Snow, the founder of the "overdosage theory;" Embley's undue support of it from his discovery of a "primary" vagal heart inhibition in dogs from overdosing; and the conclusions of the Committee of the Royal Medico-Chirurgical Society from their ninety-eight instances of death (to the effect that death occurred as follows: In 48 per cent. in incomplete anesthesia; in 25 per cent. clearly not under an overdose, and in the majority after cessation of administration; in 6 per cent. overdosage improbable; and in the remaining 7 per cent. overdosage not established from any direct evidence). In not one of that series of cases does he find any clear record of the alleged

<sup>1</sup> Lancet, May 15, 1915.

<sup>2</sup> Wien. klin. Woch., April 3, 1914.

<sup>3</sup> New York Medical Journal, April 24, 1915.

<sup>4</sup> British Medical Journal, September 19, 1914; cf. Proceedings of the Royal Society of Medicine, 1914, vii, 57.

symptoms of primary heart failure from overdosage. Snow had fixed the "strength for safety" at 4 per cent., and Paul Bert had reduced it to 2 per cent. Nevertheless, fatalities continue and multiply. His own explanation is "fibrillation," which he attributes to "insufficient concentration" and "discontinuous administration." His experimental basis for his theory is that in animals the stimulation of "light" anesthesia induces extrasystoles apt to develop into fibrillation; and this is fatal. On the other hand, "full" clinical anesthesia depresses the ventricles, and renders them immune to fibrillation. Prof. J. A. MacWilliam<sup>1</sup> concludes his review with the statement that "ventricular fibrillation is certainly the chief cause of early collapse in the cat, and probably an important cause of early collapse in man; no other explanation meets the facts so well.

*The Action of Chloroform.* E. Lawrie, at whose request Gaskell undertook to complete the work of the Hyderabad Commission, writes in the *British Medical Journal* (October 3, 1914) as follows: "The matter has been finally disposed of by Lockhart Mummery's experiments on the heart (kept beating by artificial respiration) of animals beheaded under an anesthetic and pithed. It was found impossible to stop the heart with chloroform given in the ordinary dose. When the air was completely saturated with heated chloroform, the heart stopped, but it could always be revived, showing that it was not poisoned with chloroform, but was stopped either mechanically or by deprivation of oxygen. Those experiments have completed the proof that the fall of the blood-pressure under chloroform is vasomotor, and, therefore, in the first instance protective, and is not due to the action of the drug on the heart."

II. DIAGNOSIS AND PHYSICAL SIGNS. *Special Functional Heart Tests* are enumerated by M. Flores-Estrada as based, by Stahelin, upon exercise; by Max Herz, upon the cardiac action after prolonged forearm movement; by Mendelson, upon the delay in its return to normal after exertion; by Katzenstein, upon the effects of a digital compression of the femorals upon pulse rate and pressure; and by Mackenzie, upon those of the avocational stresses upon the cardiac function. Less direct are the Vaquez-Digne method by a determination of the delay in the elimination of a given quantity of NaCl; and Poczobutt's "differential temperature method." The normal difference between the axillary and the rectal temperatures is from 1 to 3; in myocardial insufficiency it is one degree over because the visceral circulation is supplied with blood at the expense of the cutaneous. This is a ready means of differentiating cardiac asthma from the bronchial; but its "early" recognition and treatment require the other tests, and a determination of the systolic blood-pressure.

<sup>1</sup> *British Medical Journal*, September 19, 1914; cf. *Proceedings of the Royal Society of Medicine*, 1914, vii, 57.

*The Tests for Myocardial Competence* have been compared in a number of cases by J. M. Swan,<sup>1</sup> namely, the variations in the pulse rate in the recumbent and in the erect posture; the cardiac efficiency factor of Tigerstedt; the percentage of the pulse pressure accompanying the second phase of the auscultatory blood-pressure reading; the C. S. and C. W. (cardiac strength and cardiac weakness) ratio of Goodman and Howell and the cardiac overload factor of Stone. He concludes in favor of the cardiac efficiency factor of Tigerstedt, and of the percentage of the pressure under the second phase. A cardiac efficiency factor of 40 per cent., or more, would point to distinct myocardial inefficiency. A second phase of 30 per cent., or less, would indicate the same condition. The overload factor of Stone is more suggestive of peripheral resistance than of myocardial weakness.

*A Rapid Death Test for the Battlefield.* J. J. Hanley<sup>2</sup> confirms d'Halluin's<sup>3</sup> suggestion of an instillation of ether *into one eye* (the other serving as control), in the horizontal body posture. Reddening of the eye shows life; yet negative findings should not be absolutely relied upon. He thinks that a better test might be a drop of adrenalin (1 in 5000) upon the conjunctiva; it is of easier application in severe head injuries.

*The Oculocardiac Reflex and Its Clinical Significance* are dealt with by N. Orlando.<sup>4</sup> Finger pressure applied to the ball of the eye has a remarkable heart-slowng influence, particularly in children and women, suppressing from four to fourteen beats a minute. From the strange fact that on renewing the compression this bradycardial effect is diminished, and that after four successive pressures it ceases, we gather that the reflex mechanism is easily exhausted. Moreover, if the compression be sustained, the opposite result follows, in the direction of tachycardia, indicating an ultimate stimulation of the sympathetic. This, too, is less marked in men than in women. We might almost infer that, under its normally variable individual responsiveness, the entire reaction is intended as a double protection for the delicate ocular structures—an "emergency bradycardia" on any sudden blow, to guard it against vascular distention, and a "restorative tachycardia" to save it from a lasting diminution in its blood supply. On that physiological assumption, the pathological observations recorded by Orlando would constitute an interesting problem. These are briefly as follows: Valvular disease, which does not modify the central nerve factors, leaves the reflex unimpaired. But in aortic arteriosclerosis, whether saturnine or syphilitic, it is absent. In tachycardia, when the vagus is affected either centrally or at the periphery, it is likewise absent. On the other hand, in epilepsy, under a heightened spastic irritability, it is increased

<sup>1</sup> Arch. Int. Med., February, 1915.

<sup>2</sup> British Medical Journal, December 19, 1914, p. 1092.

<sup>3</sup> Presse Méd., No. 67.

<sup>4</sup> Rif. Med., February 27, 1915.



in proportion to the intensity of the affection. E. B. Junson's paper on the oculocardiac reflex was published in April, 1915, in the *British Journal of Children's Diseases*.

A *Normal Presystolic Sound*, of lower pitch than is audible, but readily identified in phonographic tracings from healthy boys, is attributed by E. W. Bridgman<sup>1</sup> to a tensive vibration of the ventricular wall. It lasts 0.04 of a second, preceding the first sound by 0.07 of a second, and occurring 0.02 of a second after the beginning of the auricular wave in the apex cardiogram.

A *Normal Substernal Peculiarity of the Heart Sounds*, of a "superficial scratching" (sometimes clicking or tapping) character, of short duration, and uninfluenced by respiration, is noted by G. Blumer<sup>2</sup> as occurring in all subjects after the age of two. It can be intensified in about half of them by inclination forward, or by the lateral postures. Its maximum audibility, which centres between the fifth and sixth costal insertions, is apt to shift 1 or 2 cm. leftward in the left decubitus. He regards it as frictional rather than endocardial, though it might be mistaken for the latter by those unaware of its physiological constancy. It is often conducted by the ensiform cartilage, and sometimes below it.

III. SYMPTOMATOLOGY. *The Adams-Stokes Syndrome*. The morbid anatomy is illustrated by the contribution of three valuable cases by A. and B. S. Offenheimer.<sup>3</sup> Their histological findings suggest that the circulatory insufficiency was due, in two of them, to the "bundle" or "node" lesions of heart-block, and in a third to an adjacent infarct in the myocardium.

"*Angina Abdominis*" is a term which, when used in the literal sense intended by M. J. Breitmann<sup>4</sup> in his cases, for the anginoid paroxysms which he describes, would imply their pathological causal identity with angina pectoris. That significance seems to be premature as a generalization, and therefore premature as a nosological expression; so long as the latter affection still waits for its complete etiological definition. A close resemblance is apparent in the symptomatology of the paroxysmal pain and of the meteorism; but true angina does not consist in these alone. He really bases his sweeping conclusion, as to the seat and as to the cause of the paroxysmal pain, upon his discovery of abdominal aortic arteriosclerosis in those cases which he examined after death. But meanwhile we have not yet got beyond "discussing" what the true relation may be between arterial disease, whether aortic or coronary, and angina gravis.

*The Seat of Pain in Angina Pectoris* still remains an open question after Manóelian's<sup>5</sup> detection of ganglion cells in the connective-tissue

<sup>1</sup> Arch. of Int. Med., October, 1914.

<sup>2</sup> Ibid.

<sup>3</sup> Arch. Int. Med., June, 1914.

<sup>4</sup> Zentrallbl. f. inn. Med., November 14, 1914.

<sup>5</sup> Ann. Inst. Pasteur, June, 1914.

of the middle coat of the aorta, and also of some apparently "sensory" nerve fibers. Some form of reflex arc, such as these would suggest, might best explain the mechanism of dilatation and of constriction of arteries in general. The presence of sensory fibers in the aorta lends some support to the old view of periaortitis as the cause of pain; as well as to the view of Sir Clifford Allbutt, and recently of Vaquez, as to an "aortic localization" of angina. At the same time too, it gives some color, on the plausible assumption of a wider extension of the same structural characters, to Alexander Morison's contention which he bases upon his discovery of ganglion cells in the mesarterium of the coronary artery, that the pain of angina may be in certain cases cardiac, and causally connected with "coronary" disease. Manoélian's study of the upper aorta would, however, distinctly favor the probability of the other theory, provided Vaquez and others are right in believing that the blood-pressure, even if it is normal or lowered between the attacks, does rise very considerably during their acme.

IV. TREATMENT. *The Alcohol Question* has been deeply stirred by the war. For want of space we can only touch upon it.

*The Reflex Effects of Alcohol upon the Circulation* have been specially investigated by Charles C. Lieg.<sup>1</sup> He believes that alcohol cannot be regarded as a true circulatory stimulant, inasmuch as it decreases cardiac efficiency, raises disproportionately the diastolic pressure, and lowers pulse pressure. In spite of theory, there is probably some practical basis for the unaltered verdict of humanity "*Conum Vinum letificat cor hominum.*" It finds a physiological application in the trenches.

Francis Hare's<sup>2</sup> interesting criticism dwells upon the physiological fact that alcohol increases heat loss in those exposed to external cold, with special reference to his experience of the cold bath in typhoid. "It was noted that alcohol, even in small doses, markedly modified the vascular spasm which in some subjects delayed the effect; and thus enabled baths of shorter duration and higher temperature to effect a much greater reduction in body temperature. The *rationale* of cold bathing in typhoid is, at any rate, arguable. The work of Crile and others has clearly shown that its main advantage is its power to prevent the progressive vasomotor paresis of all continued pyrexia: What is commonly referred to as cardiac failure being in reality failure of vascular tone."

In *Arrhythmia*, P. T. Bohan<sup>3</sup> has quickly reduced the frequency, in nearly all his cases, by intravenous strophanthin ( $\frac{1}{100}$  grain daily or every fourth to seventh day); with no bad results in 300 injections.

<sup>1</sup> Journal of American Medical Association, March 13, 1915.

<sup>2</sup> British Medical Journal, March 13, 1915.

<sup>3</sup> Mississippi State Medical Journal, October, 1914.

*The Early Treatment of Paroxysmal Tachycardia.* H. Godlewski<sup>1</sup> believes that, if treated immediately, the tachycardia may be controlled by some mechanical irritation of the vagus, such as a sudden distension of the esophagus (*e. g.*, by swallowing, unmasterated, a large piece of bread crumb, slightly dried). This method loses its power if it is long delayed. Digitalis is then the only means of restoring to the heart beat its normal energy and rate.

*Cardiac Hypochondriacs* are made, less by their own original alarm, than by that unwisely expressed by the physician at his first call. On that principle, R. H. Babcock<sup>2</sup> reassures them; and injects, *sub cutem*,  $\frac{1}{8}$  gr. morphine and  $\frac{1}{200}$  gr. atropine, with excellent results generally.

*The Post-infective Treatment of the Heart* should not be neglected, R. N. Willson<sup>3</sup> wisely reminds us, for at least a year after any acute infection. His treatment is chiefly protective, by rest and by careful adaptation of any exertion to the duly tested capabilities of the heart.

*The Vascular Treatment of Neurasthenia* recommended by Ivo G. Cobb is<sup>4</sup> conducted with the latest pattern of Bergonie's rhythmic faradization apparatus. Its idea is to assist the vascular and tissue circulation by stimuli synchronized with the pulse, while the vigorous induced muscular contractions assist the excretion of waste products and the emptying of the capillaries for refilling with arterial blood. Another much simpler new cure, published almost simultaneously by Alexander Haig,<sup>5</sup> is the administration of sodium chloride to the point of chloridism, to supply the NaCl deficiency to which he attributes the neurasthenia. Neither of these diverging practical therapeutic notions takes any account of the psychical Freudian etiology and pathology recently set forth.

*Fatigue-relieving Methods.* The Fatigue-relief Museum, started last year at Providence, R. I., should add to its collection a leg-elevating chair. Maurice de Fleury's<sup>6</sup> advice to troopers on the march is to lie down with their knapsack as a pillow and their feet supported vertically, against a wall or a tree or the legs of a comrade. This promptly relieves (in five to fifteen minutes) the stiffness, cramp, and exhaustion.

*"Inspiratory Negative Pressure" Therapeutics in Chronic Cardiovascular Insufficiency.* The clinical instance selected by J. Pick<sup>7</sup> is that of a "neurasthenic" of thirty-six, with a twenty years' diagnosis, and unrelieved insomnia, palpitations, oppression, vertigo, and loss of the senses of smell and taste. The return of the sense of smell on the

<sup>1</sup> Presse Méd., December 10, 1914.

<sup>2</sup> New York Medical Journal, July 4, 1914.

<sup>3</sup> Journal of American Medical Association, December 19, 1914.

<sup>4</sup> Medical Press and Circular, April 14, 1915.

<sup>5</sup> Bull. Acad. de Méd., December 29, 1914.

<sup>6</sup> Therap. d. Geg., August, 1914.

<sup>7</sup> Loc. cit.



fifth day of the under-pressure treatment was followed in a few days by return of the sense of taste. The starved nerves started to work again as soon as they got food. His heart sounds had been faint, but pure; and the pulse very small. The treatment consisted in twenty-minute inhalations in the under-pressure apparatus with negative pressure of 20 to 25 cm. of water, three times daily. After a considerable reaction of palpitations and vertigo on the second day, he rapidly improved and soon returned to health and business.

*The Cardiorespiratory Effects of Diathermia* are connected, according to E. P. Cumberbatch,<sup>1</sup> with the rise in the temperature of the blood. The heart beats at an increased rate; but there is only slight cutaneous vaso-dilatation. The respiratory exchange, measured by O-intake and CO<sub>2</sub> output for a thirty-minute sitting, is diminished at the time and after. The mechanism of the process, when the high frequency oscillations are conveyed to the hands by cylindrical metal handles, is a local elevation of the temperature, which is first felt at the wrists, and induces perspiration. From this local heating the entire circulation gradually derives a higher temperature.

*The Nauheim Treatment*, in L. Thorne's<sup>2</sup> experience, can be carried out at home with results as satisfactory as at the resort. It is sufficiently obvious, however, that the practitioner's familiarity with it cannot equal that of the bath specialist, and that the least to be claimed from him is his personal supervision. Thorne is satisfied that it can achieve more in relieving dilatation and myocardial weakness than mere rest and tonics. But it should be borne in mind that the "still" bath, not too chilly, is alone suitable for critical conditions; and that in general the "carbonated" bath should be ruled out as most often harmful in the early stages of treatment.

*"Nauheim" at the Seaside.* M. Bockhorn<sup>3</sup> is hopeful of stemming the progress of cardiovascular disease ("heart and vessels" are embryonically "inseparable") in neurasthenia, and in arteriosclerotic tendency, by sending the patients to the seaside, where many more aged lives are to be found, he says, than elsewhere. From reliable tests he believes that North-sea bathing is the most effectual form of our balneotherapy by cold, carbonated, brine baths.

*The Nutritional Values of Various Sugars.* Valuable remarks (with references to experimental and clinical work) on this form of cardiac nutrition are offered in two editorials.<sup>4</sup> The latest perfusion results (in hearts of tortoises and dogs) are from Japan. As stated by K. Mizuno:<sup>5</sup> *Fructose* has a decidedly favorable effect upon all hearts. *Lactose* has a similar action, yet in many cases even a 0.1 per

<sup>1</sup> Archives of the Röntgen Ray, November, 1914.

<sup>2</sup> Practice, April, 1915.

<sup>3</sup> Med. Klin., August 2, 1914.

<sup>4</sup> Journal of American Medical Association, June 13, July 14, 1914.

<sup>5</sup> Sei-i-Kwai Medical Journal, March, 1915.

cent. solution induces arrhythmia, rapid weakening, and early stoppage. *Cane sugar* has a stimulating and irritating effect, with very energetic action at first; but arrhythmia, with increased frequency, soon begins; and the strength fails rapidly.

*Harmful Effect of Certain Sugar-cane Products.* Roy Blosser,<sup>1</sup> in his preliminary report on two experiments in dogs, points out that, while the moderate use of sugar had often been studied and found harmless, harmlessness has not been proved in the case of the derivatives of brown sugar, apt to be largely consumed in candies, syrups, etc. In one dog the result was negative; but, in the other, definite changes were found in the intestine, liver, and kidney. He concludes that the well-known, but ill-explained, injurious effects of sweets upon the teeth must be due, not so much to local, as to organic and nutritional damage.

*Cane-sugar versus Beet-sugar in Heart Disease.* Arthur Goulston, of Exeter, expresses strong views in the *Standard*, March 30, 1915. He attributes the alarming increase in "cardiac" mortality recorded in Arthur Newsholme's Local Government Board Report, 1911-12, for the age period forty-five to fifty-five, and the even greater increase reported from Germany (a beet-sugar consuming country) by Karl Grassmann<sup>2</sup> to the fact that beet-sugar was first, and increasingly, used since the middle of the nineteenth century. His clinical experience is that in heart disease it is not only useless, but injurious. He states that although the two refined products are alleged to be "chemically" identical, yet "physiologically" they are essentially different in the absence from the beet-sugar of the "activator" proved, by "the physiological test," to exist in cane-sugar as the indispensable agent for the appropriation of its nutritional value to the muscles, and in particular to the heart, which he says requires daily its own weight (in the adult 9 to 10 oz.) of sugar for its proper nourishment, while muscle forms 43 per cent. of the total body weight. He does not support his statement that beet-sugar is "absolutely injurious" by any proof, but only notes the fact that, during the winter, bees deteriorate and perish if fed on beet-, instead of cane-sugar.

## THE BLOODVESSELS.

**Vascular Physiology and Pathology.** I. SPHYGMOMETRY. *The Detection of Pulsus Alternans by the Sphygmomanometer.* In describing his method, James B. Herrick<sup>3</sup> remarks that, although the information afforded is not always essential, it is of help in making a prognosis, the

<sup>1</sup> Journal of American Medical Association, August 8, 1914.

<sup>2</sup> Münch. med. Woch., November 11, 1913; cf. British Medical Journal, February 14, 1914.

<sup>3</sup> Journal of American Medical Association, February 27, 1915.

pulsus alternans being rightly regarded as often an evidence of serious impairment of the muscular efficiency of the heart. The diagram illustrates the results obtained under different manometric pressures.

When the systolic pressure is being tested in a patient in whom an alternating pulse is present, a manometer pressure may be reached that cuts off "every other beat" (the weaker beat), thus halving the rate of the pulse at the wrist. Increasing the pressure on the brachial artery, by still further inflating the cuff, will of course block all the beats. Then by slowly letting out the air, the point is reached at which the stronger beat alone comes through. When still more air is allowed to escape, another point is determined where the alternate, weaker beat is also perceived. This doubles the apparent pulse rate; it reestablishes the original rate. The difference in strength between these beats, when thus controlled by the sphygmomanometer, which exerts a

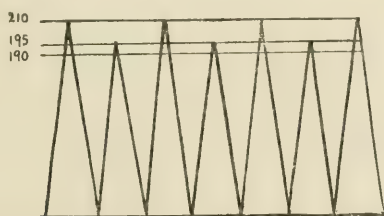


FIG. 4.—At 210 mm. of mercury no pulse is felt at the wrist. Below 210 and above 195, the stronger beat is felt. Below 195, for example at 190, the pulse rate doubles and the beats are alternately strong and weak.

pressure just below the maximal pressure for the weaker beat, is relatively great. The difference is plainly perceptible to the palpating finger on the radial artery. The test can also be made by the auscultatory method.

H. C. Gordinier's<sup>1</sup> paper on *P. alternans* allots to it, in agreement with Mackenzie and Windle, the third place among irregularities, extrasystoles coming first; and second, a persistent irregularity of auricular fibrillation. There is a temporary form of this pulse, much less grave, due to excessive rapidity. The persistent form is evidence of myocardial degeneration, and is generally fatal within three years.

"*Sphygmophonoscopy*" might conveniently be reserved as a generic name for any present or future methods of "*Joint Eye and Ear Exploration*." That joint study is still confined to one of them, which might be adequately identified as "*Sphygmopiesis-phonoscopy*." This special study can only be described explicitly as "An estimation of the significance of the actual manometric pulse-resistances to artificial pressures; our estimate being based upon inferences derived from our interpretation of the unexplained intra-arterial sound vibrations (so

<sup>1</sup> American Journal of the Medical Sciences, February, 1914.



far as these are audible) produced by those pressures. That special study is a marvel of ingenuity. It is, however, a formidable undertaking even if contemplating alone the disparate exploring efficiency of the monometer and of the stethoscope, and the contrast between the mathematical manometric data and our still problematic stethoscopic data. Conclusions have to be built up on an alternating and reciprocating plan of inferential scaffoldings; spacious inferences from scrupulous measurements, alternating with scrupulous measurements applied to the inferences. A large element of *ignotum per ignotius* cannot hitherto be excluded from that method of construction. Our worst difficulty is the inherent experimental fallacy. The *materies experimenti* is not the pulse. It is an artefact from a mechanical manipulation of it, the modifying nature and extent of which are beyond our means of determination. Chiefly because of this, that great endeavor has not yet yielded the solution of the pulse-pressure problem. It has taught us much, and will teach us more. But hitherto it has mainly disclosed that there are other unexpected problems for us to clear out of its way.

The real  $x$  in the problem is, we are all agreed, the diastolic pressure. That  $x$  is an "unknown." But it is not, as too generally conceived, an " $x$ -quantity," but an " $x$ -variation;" not an  $x$ -pressure, but an  $x$ -decompression. The conception of a diastolic pressure "persisting" as a uniform quantity until the next systolic rise is untenable.

The "*full systolic rise*" is a *wave* of pressure so rapid and evanescent as to constitute, at each spot we may explore, a single time-unit. This affords a possibility for its accurate determination at that spot. But after that initial pulse event all the rest is a steady *flow*. It is not alone a flowing of the blood, but the more rapid flow of the systolic wave pressure while it lasts. When this has passed away there are still those waning, slowly "flowing" pressures which we have hitherto been crystallizing as a unit.

As regards "the diastolic pressure," the first difficulty is to know "when" it begins; or rather "when" it emerges as a separate uncomplicated value. That, after all, is a consideration of mainly theoretical importance. When, however, we have realized that it is not a quantity but a terminable subsidence, the essential clinical consideration, both physiological and pathological, is for us, "when" does it end, and with what co-efficient of pressure, if with any? We can only say that the normal sphygmogram suggests that its pressure becomes inappreciable just before the systolic rise. This again would suggest that more helpful terms to work with might perhaps have been: "the diastolic decompression after the wave;" and "the terminal diastolic pressure" before the wave.

The latest of those pulse problems which have cropped up out of the "diastolic pressure" investigation, has been the perplexing outcome

of G. S. Melvin and G. R. Murray's<sup>1</sup> persevering analysis of the auditory phenomena. Their paper is devoted to a comparison between the "auditory" and the "maximum oscillation" methods. It ends with the conclusion that the "auditory" is, by its simplicity, accuracy, and applicability, the most satisfactory of any. They start with a statement that systolic pressure is clearly determined by the onset of the sound which is heard; and the diastolic as clearly by the pressure reading at the moment when the sound becomes duller and diminished, namely at the beginning of the "fourth phase" as it is called.

Their investigation was conducted on two groups: A "normal" group (59 healthy young adults, of an average age 20.9 years) and a "pathological" group (old people, and patients with pathological circulatory conditions). In some of the normal subjects a discrepancy of some 10 mm. occurred between the "oscillation" and the "auditory" readings of the diastolic pressure. They accepted the auditory because, at the systolic level where like differences frequently obtained, "the tactile method confirmed the auditory reading." This appeal to the digital testimony is significant. They eventually arrived at the following values as "normal: Systolic pressure, 111.8 mm.; diastolic, 65.7; pulse-pressure, 46. But a surprise had puzzled them on the way to those conclusions.

They had been struck with the very low level of pressure down to which the sound was apt to persist; and with the wide and varying range of pressure, apt to run between the beginning and the end of the "fourth phase." This confirmed them in their solution of its "beginning," as the true index of the diastolic pressure. They argue that, otherwise, they would have had to lower the normal value to 42.2; and to admit, for the "normal" in individual cases, such incredibly low values as 10, 14, 20, etc. They had also been much struck by discovering the strange fact that the occurrence of these "long fourth phases" is apparently almost restricted to young adults. In healthy childhood, and in middle age or old age, the phase is extremely short; likewise, too, in arterial thickening. This discovery is for them an explanation for the discordance between their own results and those of other observers who have assessed the duration of the fourth phase at only a few millimeters; and who have thus been misled into trusting to the "abolition of the sound" as a reliable guide. Its real value, however, is for us that of a "great fact, which itself has to be explained;" and might become fundamental to some novel conception of the whole matter.

MacWilliam and Melvin,<sup>2</sup> in their joint paper, mention other problems for elucidation. In rare cases closure of a large artery, as in armlet compression, causes a marked rise of blood-pressure. But, moreover,

<sup>1</sup> British Medical Journal, September 19, 1914.

<sup>2</sup> Ibid., November 7, 1914.

in some of them the diastolic index is found to vary by as much as 20 mm., according as it is taken during the rise or during the fall of the armlet pressure.

The practical fact, which they once more emphasize, that the digital examinations are apt to be misleading (even more for the diastolic and for the pulse pressure, than for the systolic pressure and its compressibility) is not surprising, when we remember how primitive is the ordinary tactile technic in contrast with the elaborate instrumentation and the technical skill which have to be brought to bear before any results can be achieved.

*Blood-pressure Estimations in Children.* Melvin and Murray's<sup>1</sup> latest paper does not add any fresh points. They regard the readings described as so definite and reliable as to constitute a sound standard. The comparative values in adults and in children are, (1) for systolic pressure, 111.8 and 108.1; (2) for diastolic pressure, 65.7 and 72.4; (3) for pulse pressure, 46.0 and 35.7. Earlier studies on puerile blood-pressure had been published in "Normal Children" by C. F. Judson and Percival Nicholson;<sup>2</sup> and in "Infantile Anemia" by J. Lovett Morse and Edwin T. Wyman.

II. HEMOVASCULAR MECHANICS. *Temperature and Blood-pressure.* Newburgh and Lawrence's<sup>3</sup> experiments on animals have demonstrated that high temperatures, not exceeding those of any infective pyrexia, are productive of marked hypotension. They derive the inference that the lowered pressure recorded clinically in infections may be mainly determined by the pyrexial factor.

*Spasmodic Arterial Closure.* "Temporary and Recurrent Apoplexy" is due to this cause according to A. Gordon.<sup>4</sup> He has followed up 14 cases of that sort. These are preëminently patients to be kept under strict avoidance of any arterial irritation.

*The Reversal of the Circulation in the Lower Extremity.* J. Shelton Horsley and R. H. Whitehead's<sup>5</sup> practical conclusion from this study in hemovascular mechanics, that reversal of the circulation has no legitimate place in clinical surgery, except possibly in Raynaud's disease if this be solely a "spasm." If effected as close as possible to the terminal vessels, a reversal might so raise the pressure in the veins as to cause an intense hyperemia in the capillaries and arterioles. The small vessels would be dilated as in Bier's hyperemia, only more so, as there would be positive arterial pressure in the veins. If Raynaud's disease should have no "organic" pathology, this operation might be beneficial; not by sending arterial blood through the reversed veins into the capil-

<sup>1</sup> British Medical Journal, April 17, 1915.

<sup>2</sup> Cf. New York Medical Journal, July 4, 1914, p. 49.

<sup>3</sup> Arch. Int. Med., February, 1915.

<sup>4</sup> Albany Medical Annals, August, 1914.

<sup>5</sup> Journal of American Medical Association, March 13, 1915.



laries (for, as shown by these experiments, this in all probability cannot occur), but by maintaining a constant dilatation of the terminal arterioles.

III. VASCULAR AFFECTIONS. *Bloodvessels and Gangrene.* We note in Hans Heyrovsky's<sup>1</sup> surgical paper, which deals with the danger and prevention of primary and secondary hemorrhages, and of infection and gangrene with its resulting hemorrhage, the importance for diagnosis of a "murmur" to be looked for in the wounded region. The proper operative technic is to cut well within healthy vascular tissue, and to care for its integrity during its local treatment. By excising the branches as well as the damaged trunk, without exposing the healthy vessel beyond its ligature, and by keeping the wound "open," without any suture or tampon, not one amputation had to be recorded, nor any fatality among cases not previously infected. Billroth's secondary hemorrhage mortality in 1870 was 81.4 per cent.; this was only 14.2 per cent.

*The Etiology of Chronic Arterial Degeneration.* F. W. Andrews, in the Report of the Medical Officer to the Local Government Board, continues his last year's investigation, in special connection: (1) With the influence of infections; and (2) with the aortic Ca-content as an index of degeneration.

1. The important role of syphilis has already been settled. In other infections—intramural perivascular lymphocyte and plasma cell infiltrations, and endothelial proliferations determine small local fibroses with slight rifts in the elastic laminae, and establish weak spots for attack by the general factors of arteriosclerosis. These "infective" sclerotic nodules resemble on a smaller scale the syphilitic, in contrast with those assumed to be "simply degenerative."

2. From chemical determinations of the Ca-content of normal aortas a curve was constructed of the "normal age-equivalent of aortic CaO." This has two abrupt rises: At 20, from cessation of ossification; and from 30 to 35, from beginning involution. The pathological departures from this curve are: In uncomplicated syphilis, a "notable Ca deficiency;" in non-syphilitic sclerosis, "hardly any initial rise," and sometimes little in extensive disease. "High tension and renal disease" cause no increase for a considerable time. Alcoholism shows some evidence of a slight degeneration in terms of Ca increase. Technically, he believes that the ash-percentage would be as reliable as the Ca-analysis as an index of the aortic condition.

*An Excess of Cholesterin*, apt to be found in the blood and in atheromatous patches, has been regarded by Lemoine and other French observers as the cause. They consider that cholesterin and its lipoids are "neutralizing" for blood toxins, and at the same time "constricting"

<sup>1</sup> Wien. med. Woch., February 11, 1915.

for the muscularis; and that, in excess, they are liable to "precipitation." C. Cantieri's<sup>1</sup> extensive research as to the varying blood content, and his failure to produce hyperpiesis experimentally, do not support that view.

The blame for arteriosclerosis should be attached, according to L. Aschoff's<sup>2</sup> original conception, which he supports with clinical and experimental arguments, to the *intercellular substance*. Nutritional failure would loosen it, and thus permeate the tissue with plasma from which either cholesterol or calcium, or both, would be deposited.

**THE TREATMENT OF CHRONIC ARTERIAL DISEASE.** *The Indication for the Iodides* is based by A. Martinet, in his *Clinique et Thérapeutique Circulatoires* (Paris, 1914), not upon a vaso-dilator action (he does not recognize any such in them), but upon the coincidence of a high grade of viscosity together with a high tension. That condition is a functional one, and amenable to them. When the viscosity is low they are contra-indicated, the tension being then due to cardiorenal sclerosis. It is thus all essential to determine the degree of viscosity. It should be more widely known that this can be done in three or four minutes, with the help of Hess' simple apparatus, which resembles roughly a wet and dry bulb thermometer.

*Vascular Gymnastics* of an elementary and practical kind are described by Dausset and Hanriot<sup>3</sup> for the "vasomotor inertia" of many cases of obesity, sluggish nutrition, or cardiac debility. Their balnear method consists in graduated alternate transitions from heat to cold; namely, from the hottest the patient can bear, to as cold as will produce a chilly feeling. The bathing which should not exceed twenty minutes is to be preceded and followed by ten minutes' recumbency. They find that the systolic pressure, after a brief initial fall, rises proportionately with that of the water; but the diastolic pressure varies inversely to it. The pulse pressure is thus definitely increased during the warm stage. The "pulse rate" rises with the heat, up to 100 or 110, and falls again to about 60 as the temperature drops from 47° to 20° C. They speak highly of the therapeutical value of this addition to our diuretic and dietetic treatment of slackened metabolism.

*The Medical Treatment of Aneurysm.* The rational combines with the practical in E. Maragliano's plan which is successful in a percentage of cases: Complete rest in bed; four small dry meals; only 300 c.c. of fluids daily; venesection, as a general measure and ice locally perhaps; medication to consist in injecting ergot locally, and gelatin into the buttock; and in potassium iodide internally. There is only one slight cross purpose; gelatin favoring coagulation, the iodide opposing it. Before gelatin was thought of, my own treatment had been the same

<sup>1</sup> Riv. Crit. di M. Cl., 1913, xiv.

<sup>2</sup> Med. Klin., January 25, 1914.

<sup>3</sup> Bull. Acad. Méd., April 14, 1915.

as that described, but of an intensive order, both in respect of a high dosage of potassium iodide, and of total suppression of fluids, except those belonging to fruit, or to cooked vegetables. It was not thought consistent, however, to allow lemon juice for the thirst. The sac of a small aneurysm may be closed up by clotting. But for large aortic ones, our first indication was to treat the "wall," and to renovate and strengthen it by means of fluid blood, subfibrinous, and toxin-free. Healthy tissue is the great need to replace fibrin of low type as a first step toward retraction, and perhaps slow "patching up or filling" eventually by a gradual deposition of dense fibrinous lamina.

*Other treatments* have recently been suggested, for instance H. Surmont's "temporary rest with exclusive fruit diet," "diathermy with Bergonie's apparatus," and variations on the electric high-frequency treatment.

### PHYSICAL SIGNS AND METHODS OF EXAMINATION.

**Diagonal Vertebral Percussion for Pleural Fluid**, as practised by L. S. Mace<sup>1</sup> with the finger pressed as deeply as possible against the opposite side of one of the vertebral spines, and by then reversing the process, is found by him to be a means of detecting fluid, and also of differentiating fluid from consolidation.

**Pulmonary Percussion.** A stronger belief in the capabilities of digital percussion for fine pulmonary diagnosis has probably never been held than that expressed by Nathaniel K. Wood.<sup>2</sup> He bases it upon the success of his long endeavor to standardize the degrees of dullness upon "musical tonality," and of his method of percussing the lung "from below upward," which he urges as an indispensable reform in the practice hitherto prevalent.

THE "NO-SOUND" STROKE IN OUTLINING DULL AREAS. To read the voluminous references attached to H. Lee Smith's<sup>3</sup> paper is to regret the waste of so much labor in reaching the conclusion that clinical percussion, like any other art, is "intensity of application" in the effort to control the strong work of the hands by the utmost manual delicacy. "Percussion for the deaf" is an inaudible stroke, with an exquisitely varied range of palpatory pressures of the left finger. For sharp ears the subliminal stroke is an indispensable education of the left finger in that finest of all tactile vibratory estimates. Even the deaf could not trust their "finger palpation" for any sharp boundary line; a small rigid conductor alone can enable them to define a line; and the same is equally true for audible percussion. Sansom's pleximeter is the handiest of all rigid conductors. It would be wiser to trust

<sup>1</sup> Archives of Diagnosis, July, 1914, vii, No. 3.

<sup>2</sup> Journal of American Medical Association October 17, 1914.

<sup>3</sup> Ibid., July 25, 1914.



to the testimony of practised experience in its use, rather than to the objections reported from its inexperienced trials. A thorough grasp of those definite principles reduces the initial disadvantage of the less gifted to the vanishing point; they might easily beat the gifted by sheer intensity of purpose. All that is needed are clear notions, and self-demonstrative study in the postmortem room, which is the best place for early tuition in finger percussion. A prize awarded for accurate delineation of the heart, checked by the needle method, would educate a whole class to competency in finger percussion more quickly than anything else; and would also unfailingly convince them of the need of the pleximeter for absolute accuracy, and at the same time for rapidity of work. Of all outlines, that of the lower edge of the liver is obviously the most unsuitable for educational practice.

DOCTOR LOUIS KOLIPINSKI'S<sup>1</sup> AUSCULTOPECTRUM. A pathetic interest attaches to the posthumous publication of this elaborate article whose author passed away at Washington on December 15, 1914. He regarded direct auscultation as not only inelegant and inconvenient, but uncleanly and insanitary. For mediate auscultation, he thought that certain faults and objections, specified in the paper, attached to the ordinary stethoscopes, whether constructed on the "Laennec," or on the "Cammack" type. "A single ear instrument, *cæteris paribus*, is better than the instrument for both ears, for by not shutting out extraneous impulses it allows the simultaneous use of the ears for incidental sounds." This led him to devise, and to describe under the elegant classical name of "auscultoplectrum" a combined monaural instrument, available both for auscultation and for percussion. This was constructed as follows:

The funnel end consists of an Otis urethroscope, size 25 or 26 French scale, with the obturator removed, heavily gold plated; 41 inches or 104 cm. long; of red or black rubber tubing, 5 mm. in diameter; an ear piece, a small, acorn-shaped piece of hard rubber as in a binaural stethoscope. The length of the whole instrument is 45 inches. *For percussion* a cork is the pleximeter, with its narrow end applied to the body. The base of the cork is tapped with the plectrum. This is held by the fingers at its insertion into the rubber tubing, so that the metal tube is allowed a free elastic swing; and the rubber tubing is hung about the neck.

Two tests were applied to the instrument by Kolipinski. The "auscultatory" test is the tick of a watch heard through it, and alternately through the open ear, by contact. The nature of the two sounds is stated to be identical. The "pleximetric" test is as follows: Take six empty pill boxes, No. 31. The first is empty, the second full of tissue paper, the third of absorbent cotton, the fourth contains a spiral of

<sup>1</sup> New York Medical Journal, January 30, 1915.

rubber tubing, the fifth is half-full and the sixth quite full of table salt. With a little practice with cork and plectrum, the contents of the boxes can be detected. In addition, the auscultoplectrum is a good ear trumpet. The first subject upon whom the instrument was ever used was a very deaf man. When the instrument was applied to his ear reversed, conversation was carried on without effort on either side.

There are two other stethoscopes with a single rubber tube as a conductor. Voltolini's, a hollow, flexible stethoscope described by H. Eichhorst,<sup>1</sup> and the dermatophon of C. Hueter,<sup>2</sup> designed for auscultating skin, bone, muscle, tendon, and bloodvessels, under the varying names, dermatophon, osteophon, myophon, tendophon, and sphygmophon.

The main feature of novelty in this instrument is the combination, with the monaural flexible stethoscope, of a plectrum (and of the

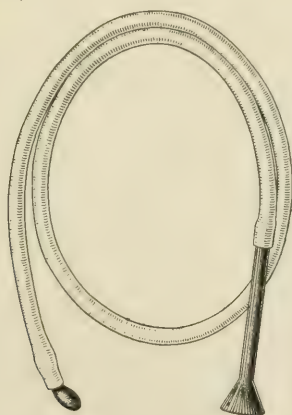


FIG. 5.—Doctor Kolipinski's auscultoplectrum.

“velvet corks” carried in its silk bag). Practically the same stethoscope has long been in use by physicians suffering from unilateral deafness, as for instance by the late Sir Andrew Clark. Some have even adapted to the single tube (or to the binaural), instead of the simple cupshaped chest-piece, a wooden stethoscope which can be made available for separate use by restoring to it its removable ear piece. For good hearers the advantage sometimes accruing from keeping one ear open can only be obtained from patient training. But that ear conveys many extraneous sounds, more of them irrelevant than pertinent to the clinical observation.

*A New Simple Stethoscope.* J. J. Singer, of St. Louis, claims for his stethoscope that it intensifies the audibility of sounds without changing

<sup>1</sup> *Traité de diagnostic médical*, 4 ième édition française, Paris, 1912.

<sup>2</sup> *Grundriss der Chirurgie*, Leipzig, 1885.

their character. Each of the resonators (there is a nest of them, carried under a protective lid,  $A$ ,  $A^1$ , and  $A^2$ ) is cup-shaped, with a flat top wall, and is preferably formed from metal, although some other suitable material which has a certain degree of resonance would do as well. When in use, the air vibrations of the chest wall are taken up in unison by the resonator itself. Consequently, the sound waves are intensified and transmitted through the hollow connecting device  $B$  and thence to the eardrums through the ear pieces  $C$ .



FIG. 8

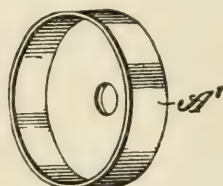


FIG. 9

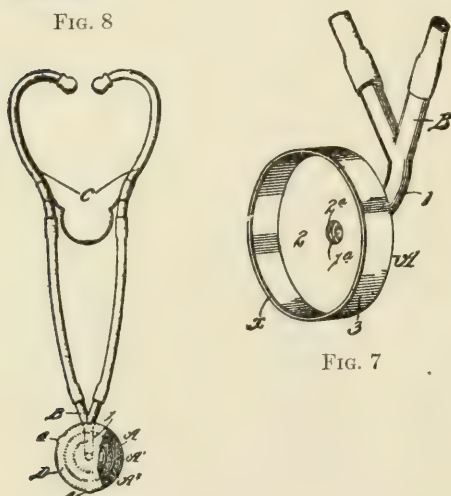


FIG. 7

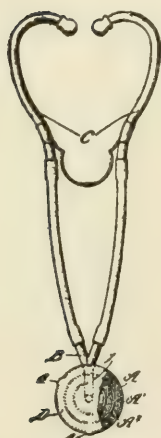


FIG. 6

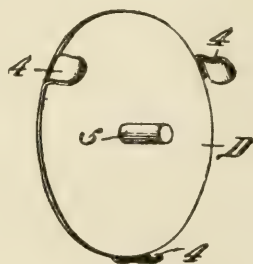


FIG. 10

FIG. 6.—View, front elevation, partly broken away, of the complete instrument.

FIG. 7.—Perspective view, showing the large resonator mounted in operative position with the combined handle and connecting member.

FIGS. 8 and 9.—Perspective views of the smaller resonators.

FIG. 10.—Perspective view of the cap member.

The cap member, Fig. 10, consists of a disk that is provided with several spring fingers that lap over the flange or rim of the large resonator, as shown in Fig. 6, thus holding the cap member in position. This cap member is provided with a stud, or guide, in the centre that projects through the centre openings of the resonators,  $A^1$  and  $A^2$ , and thus holds them in position in the enclosing shell, preventing them from rattling and moving around.

When the instrument is to be used, the cap member is removed and a resonator of the proper size is then secured to the connecting member  $B$ , the operator grasping the shank of the member  $B$  and using it as a



handle to place the resonator in proper position on the body of the patient. The small resonator,  $A^2$ , is especially adapted for auscultating children, localizing heart murmurs, and in the auscultatory method of taking blood-pressure.

Singer also claims that an instrument constructed as described above can be sterilized, because it has no parts that are damaged by water or excessive heat, such, for example, as the hard-rubber diaphragms of the stethoscopes now in general use, or as the hard-rubber bells. Friction sounds are largely eliminated, because only the lower edge of the side wall of the resonator comes in contact with the patient's body. Furthermore, this instrument overcomes the necessity of a physician owning a number of complete stethoscopes of different sizes as it comprises a compact set of resonators of different sizes.

**The Crucial Test between Tympanites and Pneumoperitoneum** is rightly pointed out by W. W. Duke<sup>1</sup> to be a "percussion of the right axillary base in the right and in the left decubitus." He relies, however, upon a belief that "a change from a flat note to a tympanitic note could only occur as a result of a loop of intestine slipping in between the liver and the chest wall." Many years ago I published<sup>2</sup> observations on the "tympanitic liver," and the "tympanitic spleen." Both these viscera are liable, under the influence of gaseous distentions of the stomach and bowel, to suffer a complete conversion of their normal outline of dulness into an equally accurate normal outline of tympanitic resonance. It was then pointed out that a diagnosis of perforative pneumoperitoneum could be made, not merely by detecting a resonance over the liver, but only after ascertaining by the most accurate percussion whether or not the outline of abnormal resonance corresponded exactly with the "normal outline and situation of the liver." In pneumoperitoneum the region is tympanitic; but the liver cannot be mapped out as a strictly limited resonance precisely reproducing the normal shape and situation of the liver. The accuracy of that test is of primary importance in preoperative diagnosis.

## THE THYROID.

**War and Hyperthyroidism.** The experiment is a much wider one than that selected for consideration by Max Kahane<sup>3</sup> in his article on its "military medicine" aspects. The "Sturm and Drang" of fighting is no time for comparative observations, or statistical conclusions, and he is unable to supply them. Yet doubtless some of them will mature eventually. The alarms and hardships of the trench are greater; but the mental shocks and sorrows, not reckoning the record of actual war terrors, which are falling, in times of wearing anxiety and physical

<sup>1</sup> Mississippi State Medical Association, St. Louis, February, 1915, vol. xii.

<sup>2</sup> Lancet, 1898, ii, 23.

<sup>3</sup> Wien. med. Woch., February 11, 1915.

privation, upon the more susceptible sex, total up much larger numerically, and more telling pathologically, than the agonies of the highly trained and less predisposed material at the front. A sad tale of increase may be expected in the morbidity returns of Graves' disease (as of insanity and nervous affections) among non-combatants, during the "année de terreur," far in excess of the returns of the "année terrible."

**Partial Myxedema.** Under this heading Prof. Wilfred M. Barton,<sup>1</sup> after referring to A. R. Elliott's first mention of it (1908), and to J. B. Nichols' comprehensive account of it (1909), narrates a striking instance. Passing to the subject of hypothyroidism, he adopts French's six categories. (1) Certain infants, not true cretins, present symptoms of amentia or idiocy. (2) Certain backward children, between two and five years of age, among other symptoms, are slow to learn to talk and walk. (3) Some growing boys and girls suffer from mental backwardness or persistent nocturnal enuresis. (4) Some stout women of child-bearing age are sterile. (5) Others at or about the menopause rapidly become too stout. (6) Some nerve affections may arise which resemble and are frequently called neurasthenia and tic douloureux. On the other hand, Barton warns against a tendency to appeal indiscriminately to thyroid insufficiency for a genesis of all other diseases, even down to scoliosis and chronic appendicitis.

**Status Lymphaticus.** Hugh Thursfield<sup>2</sup> refers to the fate of thymectomized puppies: Growth delay, flabby muscles, soft bones (with the histology of rickets), and fatal coma after four months; and to the enlarged thymus as the most constant feature of the "status." Hence the importance of examining the thymus. Radioscopy does not differentiate it from glands, when percussion has defined the increased manubrial dullness. The clinical diagnosis is helped by mysterious fits of dyspnea; subnormal vitality and temperatures, and "intolerance of exertion." Better than thyroid is pituitrin, because of its known control over the results of "shock," for this is the mechanism of fatality. Pituitrin should be given before the anesthetic to suspicious subjects for any operation.

**Exophthalmic Goitre.** THE TOXEMIC ETIOLOGY OF ENDEMIC AND OF EXOPHTHALMIC GOITRE was pointed out by Sajous,<sup>3</sup> in 1912. His lead has been followed by McCarrison and recently by Farrant,<sup>4</sup> and by others. His comments upon the paradoxical action of iodine in often precipitating the clinical syndrome are highly suggestive.

THE SURGICAL TREATMENT may derive further opportunities from Lahey's<sup>5</sup> recent operative method for thyroid enlargement under

<sup>1</sup> Journal of American Medical Association, March 20, 1915.

<sup>2</sup> British Journal of Children's Diseases, November, 1914.

<sup>3</sup> Cf. New York Medical Journal, April 11, 1914.

<sup>4</sup> British Medical Journal, July 18, 1914.

<sup>5</sup> Boston Medical and Surgical Journal, October 15, 1914.

"local anesthesia." For hyperthyroidism, Miles Porter<sup>1</sup> agrees with Babcock that injections of boiling water deserve a surgical trial.

IN THE MEDICAL TREATMENT OF GRAVES'S DISEASE, although Leonard Williams has conceived that it might more probably be due to a deficiency than to an excess of the proper secretion, the aim has hitherto been to neutralize its excess, if we should have failed to check it. Sonne gave to 23 of his series of 80 cases treated with antithyroidin, two courses of treatment, namely, one with the supply from goats which had developed myxedema after thyroidectomy, and another with the supply from those which had not. The results varied—in a manner which was absolutely "indecisive." I. L. van Zandt reports most favorably of adrenalin, administered orally and kept in the mouth for absorption, in doses of six drops four times daily. His patient was distinctly relieved after the first dose, and improved rapidly. A month later she was not yet cured; but all the signs and symptoms had greatly diminished.

THE FAILURES OF OPERATIVE TREATMENT are traced by H. v. Haberen<sup>2</sup> (in his own practice, with 22 successes from excising the thymus, and one fatality after its too incomplete excision) to a toxic activity of the thymus—if left behind, upon the heart. He deprecates radiotherapy, which is apt to be not only futile, but, in his experience, dangerous, as a preliminary to operation. The case cited above was a pure exponent of the "status thymicus" as entirely distinguished from the "status lymphaticus."

On the other hand, Mulford K. Fisher<sup>3</sup> presents a strong belief in support of the *x*-ray. Excluding from his series of 23 cases a post-operative case, and a fatality from gunshot, he records 6 cures, 5 improvements, and only 4 cases unimproved.

**Iodine in Myxedema.** An exhaustive "clinical and metabolic" investigation of the therapeutic results in a young woman, and in a girl, aged ten years, was conducted by Frey, in Kocher's<sup>4</sup> service, under serial systematic courses of the following agents: Iodine, potassium iodide, iodothylin, and iodine-free goitrous extract. The remarkable change in the blood picture produced by iodine and much more by iodothylin (the others made no change), namely, by increasing the neutrophiles, and decreasing the lymphocytes, leads him to think that iodine and iodothylin might possibly be of use in pathological lymphocytoses, perhaps even in lymphoid leukemia.

**The "Sclerosing" Radium Treatment**, which was tentatively graduated and slow at first, but later less dilatory and with larger dosage up to 5000 mg. h., is favorably reviewed by Dawson Turner<sup>5</sup> as having

<sup>1</sup> Surgery, Gynecology, and Obstetrics, January, 1915.

<sup>2</sup> Wien. klin. Woch., January 7 and 14, 1915.

<sup>3</sup> New York Medical Journal, March 6, 1915.

<sup>4</sup> Mitt. a. d. Grenz., vol. xxviii, No. 2.

<sup>5</sup> Annual Report of Edinburgh Royal Infirmary, 1914; cf. British Medical Journal, February 27, 1915.



proved of undoubted benefit in his 6 cases, and in one of them a permanent cure.

**The Medical Management**, so well reviewed by Sajous, by Robert Abrahams,<sup>1</sup> and by others, should also include constant attention, hardly ever referred to, to the behavior of the stomach. Atony, which is of the essence of the disease, claims the stomach as its earliest, and, by reason of age, sex, dental and digestive stresses, etc., as its most predisposed victim. In my limited experience, gastric dilatation of varying degree is rather the rule than the exception. In connection with our modern toxemic etiology, it should hold a first title to treatment. Indeed, from my earliest, unpublished, observations, I had many years ago conceived it to be as it were "fundamental" to the syndrome. Although it has not been specified by those who have described gastric symptoms, pain, bulimia, etc., or secretory disturbances; nor by G. Desbouis<sup>2</sup> in his illustrative case of enteralgic "attacks" of abdominal pain; I still regard it as the most probable key to the severe abdominal developments, particularly diarrhea, in the worst class of cases.

**A Quicker Test for Iodine in Body Fluids** than rubbing them into calomel is, according to J. Schumacher,<sup>3</sup> the blue color produced by a drop placed on blotting paper "recently" treated with a 2 per cent. solution of selenous acid.

**Variability in the Iodine Content of the Thyroid**<sup>4</sup> from unknown causes, and under varying supply, as in the Orkney sheep which during the winter largely feed on seaweeds, is an ascertained physiological fact of wide practical bearings, pharmaceutical, pharmacological, and, not least, therapeutical in our treatment, both of and through the thyroid gland and its secretion. The clinical suggestiveness of this facultative iodine storage is far reaching.

**Iodine in the Thyroid and in the Economy.** J. Justus,<sup>5</sup> allotted to most of the tissues a permanent, though infinitesimal, iodine content. F. Blum and R. Grützner, in 1914, failed to detect it in the higher animals, —except in transit, and in mainly inorganic chemical associations. The thyroid cells alone seem to have any biochemically constructive use for it, and to lay any permanent hold upon it. This agrees with its clinical characteristics as an ubiquitous but fleeting visitor, hurrying to escape into the inorganic world. It touches, and may pervade, all living cells on its way out; probably helping some of them, rather than harming any, thanks to their inability to stay and store it. In that unswerving office of quick and universal thorough-travel it differs from its haloid kindred, and is practically unique.

<sup>1</sup> Medical Record, June 20, 1914.

<sup>2</sup> Bull. et Mém. Soc. méd. d. Hôp., May 7, 1914.

<sup>3</sup> Deutsch. med. Woch., February 11, 1915.

<sup>4</sup> Cf. Journal of American Medical Association, editorial, March 27, 1915.

<sup>5</sup> Ibid., February 6, 1915.

E. F. Hirsch,<sup>1</sup> working with potassium iodide, finds no proof that iodine can promote bio-necrotic absorption, or phagocytosis by endothelial cells, as tubercle bacilli can do; unless it be through some inflammatory irritation from high doses. Incidentally, H. J. Corper<sup>2</sup> states that supplies of the salts of copper (inorganic, organic, or in amino-acid mixture), while they settle largely in the liver and in traces elsewhere, are not found in the tuberculous lymph glands or pus.

On the other hand, McLean<sup>3</sup> finds that iodine derivatives of the fatty acids are absorbable into cells in a lipid-soluble form. And Jobling and Peterson<sup>4</sup> report, in the blood of animals in man under potassium iodide administration, a great decrease in its antitrypsin, which they identify as the main inhibitor of the necrotic reabsorption of infarcts, and of syphilitic and tubercular caseations. Their inference—that the iodine action in the body may consist in combining with the unsaturated fatty acids—is based upon their previous demonstration that the antitryptic action of the blood and of caseous material is due in both cases to the presence of those acids as a ferment-inhibiting agency. They also adduce definite evidence of a “resolving and absorbing” action of iodides upon tuberculous caseous material.

**For Inoperable Internal Cancer,** M. P. Mikhailoff<sup>5</sup> has found potassium iodide rectal injections, associated with sodium arsenate hypodermics, life saving. *In vitro*, cancer cells displayed a special affinity for iodine. He uses, as a diagnostic test, the “pyrexial rise” which is induced only in cases of cancer by the potassium iodide injections.

**The Therapeutics of Iodine** receive a valuable contribution from A. Castellani's<sup>6</sup> results in the treatment of yaws by a mixture containing (for adults) tartar emetic 1 gr., sodium salicylate 10 gr., potassium iodide 1 dram., sodium bicarbonate 15 gr., water 1 oz, diluted in 4 oz. water, twice daily for ten to fifteen days, then five to ten days' rest and again for another five, ten, or fifteen days. In very old cases the results were much less satisfactory, not in any way to be compared with those obtained with salvarsan and neosalvarsan. It was remarkable how well borne were, in most cases, these huge doses of potassium iodide. This must be regarded as the active ingredient, and as available as a substitute for the more specific treatment, particularly in recent cases.

**The Action of Potassium and Sodium Iodides and of the Iodine Ion on the Heart and Bloodvessels** has been studied experimentally by C. Macht. The potassium ion relaxes the bloodvessels and depresses the heart. The sodium ion slightly stimulates both. The iodine ion is a powerful stimulant to both, in experiments on isolated organs; but it

<sup>1</sup> Journal of Infectious Diseases, November, 1914.

<sup>2</sup> Ibid.

<sup>3</sup> Archives of Internal Medicine, January, 1915.

<sup>4</sup> Ibid., February, 1915.

<sup>5</sup> Russky. Vrach., April 12, 1914.

<sup>6</sup> Journal of Tropical Medicine and Hygiene, March 15, 1915.

is greatly inhibited by its combination with the proteids of the blood. It remains an open question whether iodine is then again set free. If so, a stimulating effect is to be expected. The pharmacological inference is that the iodides possess no special virtue of lowering blood-pressure, apart from the special potassium effect, which could be produced more efficiently by other potassium salts.

### THE MEDIASTINUM, ESOPHAGUS, AND THE DIAPHRAGM.

**The Diaphragm and the Clinical Study of Its Affections.** Richard Dexter,<sup>1</sup> since his instructive paper on "Pain Distribution in Diaphragmatic Pleurisy," called attention at the Cincinnati Meeting to the two sets of disturbed conditions due: (1) To the peculiar "nerve supply," and (2) to the peculiar "mechanical action" of the diaphragm. The paths of pain conform to the type of viscerosensory reflexes as understood by Head and Mackenzie, on the basis of Capps's observations. The mechanical respiratory action of the diaphragm can only be explained with actual reference to its varied levels, which it is clinically essential to determine.

**Esophagismus and Cardiospasm.** Our knowledge regarding these important affections has rapidly developed with radioscopy, but is still incomplete. There is a distressing and painful paroxysmal variety of cardiospasm. In the other variety, chronic and usually painless, to which the present remarks are confined, the main features are the symptoms of stenosis, and the esophageal dilatations; both differing only in their degree from those of organic stenosis. M. E. Smukler<sup>2</sup> attributes its earliest mention to Burton (1821) and its first descriptions to Hamburger (1871), to Ziemssen and Zenker (1871), to Strümpell and Mikulicz (1882) who explained away Ziemssen's "idiopathic dilatations," and to Meltzer who admitted a primary nervous cardiac spasm followed by an increasing esophageal atony mechanically aggravated by retention and leading to regurgitation of food and mucus. On the other hand, Rosenheim, and others, contend for a congenital, or acquired, "primary atrophy" of the esophageal muscles. Lastly, Krause and his school incriminated the vagus as the seat of degeneration and as the cause both of the spasm and the atony. Among other theories the most important is undoubtedly the "reflex." Smukler's five cases afford him material for a full discussion of the practical aspects of diagnosis and treatment. The present method is that of Myer (1910)—the dilating pressure of a tubular air bag. Russell and Strauss, and Plummer who recorded 40 cases, had suggested a divulsing method (1908). A. Eschbaum,<sup>3</sup> in a nervous woman, aged twenty-four

<sup>1</sup> Cleveland Medical Journal, February, 1914.

<sup>2</sup> New York Medical Journal, April 14, 1914.

<sup>3</sup> Med. Klin., January 25, 1914.



years, after failure of many devices, successfully resorted to that of her swallowing an inflatable bag and to its intra-gastric distention to a maximum and forcible retraction through the cardia, a risky proceeding which he preferred to gastrotomy. Another important paper has been contributed by Alfred C. Jordan,<sup>1</sup> who gives bismuth-radiograms of the esophagus and of the passage of the bag through it. T. Arthur Johnson<sup>2</sup> used, in his case, and depicts his improved apparatus where the pressure from the Sippy dilator is recorded by a manometer and graduated by means of a water pressure bottle, and also guarded by an emergency valve. Relief was temporary after distending with 150 mm. Hg. pressure; but permanent after using double that pressure, which likewise proved painless.

In the discussion which followed Jordan's paper, William Hill<sup>3</sup> said that "he had hitherto failed to find a genuine, purely functional phreno-cardiac stenosis; that failure to open up was much more likely to be due to functional paresis or atony than to a mere spasm without the characteristic pain; and that nearly all dilatations attributed to primary spasm would, he thought, be found due to some anatomical lesion if properly investigated." A. F. Hertz<sup>4</sup> concluded that as the cardiac sphincter showed no hypertrophy there could not have been any continuous spasm, and that the explanation must be some "upset of coördination," sometimes induced by organic disease or a swollen mucous membrane, but in other cases by "purely nervous causes." The latter view brings us into touch with the views expressed by H. Walter Verdon in connection with angina, and referred to under that heading.

**Aërophagy.** Hayem has laid stress upon "Saliophagy" as a cause. Cade's paper<sup>5</sup> deals with "dry" aërophagy in its four degrees of extension, pharyngo-esophageal, esophageal, intragastric, and intestinal; and with its dyspeptic and neuropathic causations, which call for different treatment.

## PLEURISY AND EMPYEMA.

**"Pneumothoracic" Pleurisies,** as studied by C. Fagioli<sup>6</sup> in 30 of the 58 cases operated, are not of serious prognosis; but, as in several of them centrifugation supplied T. B. besides a moderate output of mononuclears, N-inflation is suspected with lowering the pleural resistance to bacilli.

**Intercostal Thoracotomy in Empyema.** *An Original Method.* Howard Lilienthal<sup>7</sup> aims at reducing the mortality from operated empyema. Operations have been known since the days of ancient Greece; the

<sup>1</sup> British Medical Journal, October 11, 1913.

<sup>2</sup> Journal of American Medical Association, December 12, 1914.

<sup>3</sup> Loc. cit.

<sup>4</sup> Ibid.

<sup>5</sup> Provincial Medicine, April 25, 1914.

<sup>6</sup> Rif. Med., January 9, 1915.

<sup>7</sup> New York Medical Journal, January 30, 1915.

modern one is a resection of one or two ribs. As exactness in pre-operative diagnosis is greatly to be desired, radiography is indispensable. The usual operation itself is inexact and often insufficient. "Visual exploration" of the thoracic cavity has been considered dangerous; in acute disease it is fraught with peril. Yet Lloyd<sup>1</sup> systematically practiced this procedure, as a means to performing "pneumolysis" at the primary operation, so as to insure complete lung expansion as once. Nevertheless, through the opening suggested by Lloyd, a complete sight of the entire cavity could be hardly secured.

The author's method in bad cases includes a preliminary small incision (under local anesthesia) for the insertion of a thick-walled drainage tube of narrow calibre. This enables the patient to be gradually nursed up into operating condition. Under nitrous oxide and oxygen (by the inhalation method) a long intercostal incision is made into the pleura, if possible in the seventh interspace, from a point just outside the costal angle for the length of the bony rib. With blunt retractors the ribs are now separated until the blades of a rib spreader can be inserted. But on the left side the forced retraction must be carried out cautiously, closely watching the pericardium. After the chest is emptied of fluid, the lung may be inspected for the site and character of the focus of infection. The entire hand being introduced into the adult thoracic cavity, adhesions may be broken down, and lymph coagula removed. In acute cases there should be little or no hemorrhage. With the retraction (in the adult from four to seven inches), perfect visual exploration is possible. In children the opening, though smaller, will be found ample for exact manipulation. The shock of the forcible rib-retraction, or even of any partial dislocation of the heads of the bones, is not great. If required, decortication may, in acute cases, be easily performed; while in the chronic cases, decortication or multiple cross-hatching incisions may be made through the pleura, in the manner described by Ransohoff. The anesthetic being partly withdrawn, the patient will strain or cry out, and thus distend the lung until it fills the chest. So long as no bronchus is injured, slight unavoidable wounding of the pulmonary tissue appears to do no harm.

When satisfactory expansion has been secured, the rib "spreader" may be removed, and the chest permitted to assume its normal shape. The drainage, suturing, and dressing are fully described in the paper. Breathing exercises and especially blowing exercises are to be commenced almost immediately. In an uncomplicated pneumococcus case, a complete closure may occur in two weeks. At no time should irrigation be practiced. In the complicated cases and especially in the metastatic empyemas "revision" may be required, by reopening the wound and again separating the ribs. This secondary opening of the chest is a

<sup>1</sup> Am. Surg., xlv, p. 373.

simple matter; it amounts to little more than a dressing under anesthesia. Should pockets have developed or lung retraction have recurred, then a rib resection would be needed, unless it had become obvious that a systematic thoracoplasty could not be avoided.

Lilienthal's experience has been limited to seven cases. Two of the patients died; and a child of four strongly suspected of tuberculosis, had not yet recovered after several months. The other patients are well and their histories to be reported. The author's conclusion is that the operation is not a shocking one; that the danger of hemorrhage is less than with rib resection; and that the procedure is in line with modern surgical principles.

**The Suctional Treatment**, which has often been tried, has been successfully practiced for the last few years by J. M. Flint, of New Haven, in a series of 40 cases, with the help of two reliably air-tight empyema tubes, one of which is kept under the negative pressure of a water vacuum.

**"Perflation"** was the term selected in 1886,<sup>1</sup> on the pattern of "perfusion," as the best designation for a method which I have long ago abandoned since the practice of wide, open drainage has been generally adopted. That method has been used since 1896 by T. Silvestri<sup>2</sup> under the name of "Kahawara's method;" and he still recommends it as a means of rinsing the pleura, and of loosening the pus by bubbling air through it between the two apertures. In the present era of artificial pneumothorax, an obvious improvement in that method, if it were to be perpetuated, would be the perflation of pure oxygen, or of some antiseptic vapor instead of washed air.

**An Appropriate Vaccine** from the pus evacuated is suggested by S. J. Ross<sup>3</sup> on the strength of 6 cases, as a means of accelerating the healing of the empyema and of its wide orifice, which is often so slow.

## THE AFFECTIONS OF THE LUNGS AND BRONCHI.

**Migration of Foreign Bodies through the Pulmonary Tissues.** The posthumous paper of E. Schwarz,<sup>4</sup> who was killed at the front, mentions instances of his own, and similar observations by Flörcken, Hofmeister, and Karewski.

**Non-tubercular Affections of the Apex.** Litzner's<sup>5</sup> thoughtful article deals with the clinical aspects of this important subject. L. Ferrannini,<sup>6</sup> after going over similar ground, adds his postmortem observations: that half of the total cases are tubercular; the other half due to sclerosis from syphilis, pleurisy, interstitial pneumonia, or dust inhalation.

<sup>1</sup> Lancet, vol. ii, p. 226.

<sup>2</sup> Policl., January 3, 1915.

<sup>3</sup> Medical Press and Circular, February 15, 1915.

<sup>4</sup> Beit. z. klin. Chir., December, 1914.

<sup>5</sup> Gazz. d. osp., February 17, 1914.

<sup>6</sup> Rif. Med., January 30, 1915.



**Common Colds.** Nathan P. Stauffer<sup>1</sup> classifies *chronic rhinitis* as hypertrophic, suppurative, or atrophic; and *acute rhinitis* as infectious, mechanical, vasomotor, or malhygienic. The most frequent causes are improper clothing, influenza, adenoids in youth, and worry or over-indulgence in food and drink among adults. Often rhinitis or common cold is a recurrent attack due to adenoids, nasal malformation, polypi, sinus disease. Its surgical cure necessitates removal of adenoids, of offending turbinates, or of polypi, and suitable operations for drainage in maxillary, frontal, ethmoid, or sphenoidal sinus disease.

**This Winter's Influenza Epidemic** in the British Isles has been commonly known as the "influenza throat." W. Murphy,<sup>2</sup> of Dublin, describes this form of pharyngitis as characterized: (1) By arising usually in the late stages of, and after, the acute attack of influenza; (2) by causing a marked amount of cough, discomfort and dysphagia; (3) by the fact that the symptoms are invariably worse at night than in the day; (4) by presenting comparatively few physical signs in proportion to the symptoms complained of; and (5) by being very persistent and intractable unless carefully treated.

The symptoms are mainly pain and soreness with a feeling of fulness and stiffness in the throat. This stiffness is characteristic. The resulting dysphagia tends to wear off as the act of deglutition is repeated. The cough is hard and dry, a typical throat cough in exhausting paroxysms. The treatment is mainly sedative and protective. But in addition cold or damp air must be avoided, the bedroom kept warm, and the window only slightly opened at night; he recommends dram doses of glycoheroin, or doses of 10 minims of syrup of squill and of syrup of codeine with  $1\frac{1}{2}$  to  $2\frac{1}{2}$  minims of dilute hydrocyanic acid; and to paint the pharynx with a solution of 10 grains of menthol in 1 ounce of parolin, with or without the addition of 3 grains of cocaine.

**Plastic Tracheitis and Bronchitis.** In their rare and remarkable case (a female, aged forty-five years), where recovery from urgent dyspnea followed upon leeching the neck and a local hot pack, H. Lawrie and H. C. Colville<sup>3</sup> record the expectoration of two tubular casts of the trachea. The second one was a complete mould of the windpipe and of the right and left bronchus. Small fragments were coughed up during the ensuing days. It is stated that the smaller bronchi and bronchioles were absolutely free.

**The Infectiousness of Pertussis** is attributed by E. Freer<sup>4</sup> to the early catarrh rather than to the subsequent whooping stage. Weill and Pelu's observations during ten years (published in 1901) revealed no instances of infection during the paroxysmal stage from 15 children

<sup>1</sup> New York Medical Journal, March 28, 1914.

<sup>2</sup> Medical Press and Circular, March 24, 1915.

<sup>3</sup> Medical Journal of Australia, February 13, 1915.

<sup>4</sup> Med. Klin., May 17, 1914.

kept in contact with 93 healthy ones. The contagium is probably conveyed by direct contact. If, as contended by Weill, the paroxysmal stage ceases to be infectious eight days after its onset, this might account for the limited spread of the affection at school or hospital. The question as to its possible spread by adult carriers of some atypical contagium would still remain open.

**Hay Fever.** ANAPHYLACTIC SKIN REACTIONS EXCITED IN HAY FEVER SUBJECTS BY POLLEN OF VARIOUS SPECIES OF PLANTS. A most interesting account of the results obtained in 58 sufferers is published by G. L. Goodale.<sup>1</sup> It should be consulted by all specially interested in the treatment or the study of the affection.

**THE BLOOD IN HAY FEVER.** A valuable contribution from Emrys-Roberts gives the results of his daily examinations of his own blood for about eight weeks, during the attack. The chief features, among many alterations, were a polycythemia unaccompanied by cyanosis or large spleen, and a marked leukopenia (count of polymorphs diminished; of eosinophiles, and of large mononuclears and transitionals, increased; occasional mast cells).

**THE CALCIUM CHLORIDE TREATMENT OF HAY FEVER.** Further success is reported by R. Emmerich and V. Loew.<sup>2</sup> This they attribute to the physiological dependence of cell nuclei, muscles, ganglion cells and leukocytes, upon calcium, which also allays nerve excitability. For its larger supply they have always recommended vegetable, rather than meat or starchy food, with manifest advantage to the sufferers. The remedy should be continued all through the year, in daily doses equivalent to that contained in a quarter or half a liter of milk, in addition to abundant vegetable and fruit diet.

**The Etiology of Chronic Asthma Bronchitis**, discussed at the Chicago Internal Medical Society by K. K. Koessler and A. M. Moody,<sup>3</sup> includes Bardan and Piery's "tuberculosis lenta cum emphysemate" where acid-fast tubercle bacilli may be absent, but Much's "granular form" of tubercle bacilli productive of typical tuberculosis in guinea-pigs are most often to be found; yet not alone, but in association with special anærobic microorganisms. This supports their view of the genesis of true bronchial asthma, contrary to that which regards the bronchitis as a secondary development; namely, that the asthmatic patient becomes sensitized or anaphylactic to the infective agent causing his cold and his bronchitis. The bronchial exudate of 28 asthmatics showed, besides the common aerobic pneumococcus, streptococcus, influenza bacilli and *Micrococcus catarrhalis*—a symbiotic triad of anaërobic organisms: (1) A gram-negative, fusiform bacillus, which produces a putrefactive odor in the culture; (2) a gram-negative, very small bacillus, which pro-

<sup>1</sup> Boston Medical and Surgical Journal, November 5, 1914.

<sup>2</sup> Münch. med. Woch., January 12, 1915.

<sup>3</sup> Journal of American Medical Association, March 27, 1915.

duces characteristic black colonies on blood agar, and (3) a very small streptococcus. Their role in the production of parenteral resorption of the split protein products is probably a twofold one: (1) They form products of putrefaction (amins), which on resorption lead to a spasm of the smooth muscles of the bronchi, and (2) they produce areas of liquefaction necrosis in the epithelial layer of the bronchial mucosa and submucosa which permit a rapid resorption of the toxic products *in loco*.

According to them, the anaphylactic shock associated with bronchial spasm is the result of the parenteral entrance of fractions of foreign protein into the circulation, and of their action on the smooth muscles of the bronchi.

The precautions suggested by J. L. Goodale are (1) a preliminary skin test with horse serum for all previously treated with horse serum for tetanus, diphtheria, or plague; and (2) in subjects to be injected for the first time, an inquiry whether any asthmatic symptoms had ever been experienced in the vicinity of horses; if so, the patient should be tested.

**Anaphylaxis in Puerile Asthma in Special Relation to Egg Poisoning.** F. B. Talbot<sup>1</sup> believes that clinical evidence is conclusive as to asthma being a bronchial anaphylactic manifestation, probably analogous to urticaria in the skin. The cause has been identified by him in several cases with egg-poisoning by inoculating a cutaneous scarification with white of egg. Horse asthma, due to the protein of the horse, can be identified in the same way. The practical indication, which is attainable in most cases, is to cure the egg idiosyncrasy by increasing doses of egg albumin administered in capsules.

**Serum Sickness and Anaphylaxis** (by no means, as insisted by O. Grünbaum, interchangeable terms) are likely to derive greatly extended attention in practice as a side result of the war. W. Dalgarnie<sup>2</sup> points out that there will be shortly, owing to the varied prophylactic injections given to men for the front, and to antitetanic serum injections to most of the wounded, a huge body of subjects liable to future risks from any preparations of horse serum.

**Septal Perforation in Narcotic Habitues** was recently observed and traced to its causation by Perry M. Lichtenstein,<sup>3</sup> owing to one of the prisoners in the city prison complaining of his nose, and that he could "scarcely breathe at times." The condition exists only in sniffers of cocaine and heroine. Cocaine appears to be the more destructive to the nasal mucosa. Heroine, used full strength, also produces the condition. A combination of heroine and cocaine will produce perforation in a few months. This remarkable fact is worth remembering

<sup>1</sup> Journal of American Medical Association, March 27, 1915.

<sup>2</sup> British Medical Journal, February 6, 1915.

<sup>3</sup> New York Medical Journal, March 13, 1915.



among the varied factors of dyspnea; and also in connection with the nasal use of these drugs for its relief.

James Adam, in his book on *Asthma and its Radical Treatment*, traces the affection in most cases to a toxemia, arising from faulty metabolism, and often combined with obstructive lesions chiefly of the nose.

II. Bourgeois,<sup>1</sup> who uses intratracheal fluid injections and pulverizations through a 5 c.c. syringe, with long cannula passed down to the bifurcation after an anesthetic spraying of 10 drops of a 1 in 20 cocaine solution, finds that oily solutions are not always well borne, but aqueous injections of novocain (1 in 100) are invariably harmless and successful in remarkably small doses, particularly when administered during the paroxysm. The best results are obtained by adding a feeble quantity of adrenalin (25 drops of a 1 in 5000 solution). This confirms Hertz's observation that adrenalin is efficacious in much smaller doses than generally used. The dyspnea is eased within ten minutes, and the patient can lie down and sleep. The extremely abundant expectoration which follows is evidence of the bronchial permeability induced by the anesthetic and vasoconstrictive action. The only contra-indications are old age and hypertension. The effects are less striking from interparoxysmal treatments.

Ernest Zeublin<sup>2</sup> has had good results in chronic asthma and hay fever from a combination of adrenalin and pituitrin, and he recommends pituitrin for acute heart failure.

**Sporotrichosis**, most commonly due to the *Sporotrichum Beurmanni* (one of the eight "pathogenic" varieties, among nearly a hundred kinds of these hypomyces), is, according to H. Gougerot,<sup>3</sup> one of the most protean of affections, attacking nearly all tissues and organs including the lung, and capable of simulating cancer, tuberculosis, syphilis, or almost any affection of skin, bone, joints, muscles, etc. Nothing, however, is easier than its diagnosis by the *cultivation test*. This requires no laboratory, no warm chamber; not even a microscope, when the aspect of the culture is familiar. The Beurmann and Gougerot technic consists simply in cultivating at ordinary temperatures, on peptonized glucose-gelose, the pus forming in the initially indurated nodules. In deep situations, as in osteitis, arthritis, etc., the nature of the affection has to be determined by serodiagnosis.

**Bronchial Spirochetosis**, simulating either early tuberculosis or pneumonia, is a yellowish or rusty sputum containing neither tubercle bacilli or pneumococci, but spirochetes indistinguishable from those in the mouth of healthy subjects has been described by J. W. Scott

<sup>1</sup> Bull. Acad. Méd., April 21, 1914.

<sup>2</sup> Boston Medical and Surgical Journal, December 24, 1914.

<sup>3</sup> Cf. Medical Press and Circular, October 7, 1914.

Macfie<sup>1</sup> in 2 cases. Under creosote treatment the pyrexia and the acute symptoms subsided in a few days.

**Streptotrichosis**, another prevalent infection widely distributed in the organism, has its most common incidence in the bronchial system, probably by extension from the mouth.

AN ACID-FAST STREPTOTHRIX (*NOCARDIA*), of branching mycelial growth without ray-like granules, is regarded by D. J. Davis<sup>2</sup> as responsible for pulmonary lesions simulating tubercle, as in a case which he mentions. The treatment should be potassium iodide in large doses.

A DIFFERENTIATION BETWEEN STREPTOTRICHOSIS AND TUBERCULOSIS, which may co-exist in man, and show their organisms jointly in the sputum or in the purulent discharges, is of importance owing to the unsuspected prevalence of the streptothrix. As the distinction cannot be made clinically, it is based by E. J. Claypole<sup>3</sup> upon differential staining method, and upon the cutaneous reactions to "streptotrichins" prepared from the mycelia which are non-acid fast, and the bacillary organisms which are partly acid fast. The skin reaction can identify any other local infections (in the glands, bone, etc.) besides the pulmonary.

<sup>1</sup> Journal of Tropical Medicine and Hygiene, March 15, 1915.

<sup>2</sup> Archives of Internal Medicine, July, 1914, vol. xiv.

<sup>3</sup> Ibid.

# DERMATOLOGY AND SYPHILIS.

By WILLIAM S. GOTTHEIL, M.D.

## DERMATOLOGY.

**The Auto-serum Treatment in Psoriasis and other Dermatoses.** Psoriasis is one of the commonest of all dermal affections; at least 3 per cent. of all dermatoses that we meet with being one or other of its various forms. Yet its etiology is entirely unknown to us, and its treatment is so ineffective as to be a legitimate reproach to the specialty. During the twenty-five years in which it has been my business to watch and record dermatological progress, I have failed to note a single advance of any importance in its treatment. At the beginning of that period, chrysarobin was the local remedy of election, with tar as a bad second, and ammoniated mercury as the only drug that could be used on the face and head. At the present moment, our standpoint is exactly the same; anthrarobin and the various tar derivatives have not proven as useful as the original drugs, and no new ones have made any permanent place for themselves. Internally, arsenic, which at first enjoyed a good reputation in the treatment of the disease, has rather lost ground, though it is still considered of value as an aid to the local treatment in certain cases by some observers. Thyroid medication, though effective in some cases, has been practically abandoned on account of its dangers, unpleasant by-effects, and the absence of permanent results. The same thing may be said of the local treatment with the x-ray; it does no more than chrysarobin will do, and is certainly liable to do damage in unskillful hands. We are therefore, sad to say, in exactly the same position with regard to the treatment of psoriasis that we were a quarter of a century ago; we can, in most cases, remove its symptoms, with the certainty, however, that they will return within a very short space of time; we cannot pretend to cure the disease at all.

The elaborate researches made by Schamberg, in conjunction with Kolmer, Ringer, and Raiziss,<sup>1</sup> have thrown light on the metabolic changes occurring in psoriasis, though they have not as yet helped us much either as regards the etiology or the treatment of the condition. Given in condensed form, their preliminary conclusions are as follows:

1. The psoriatic eliminates less nitrogen in the urine under a given diet than do other individuals.

<sup>1</sup> Research Studies in Psoriasis, Rebman Co., 1914.



2. This nitrogen retention corresponds, in a general way, to the extent and severity of the eruption.

3. There is no disturbance in the eliminative capacity of the kidneys to account for the nitrogen retention.

4. A low nitrogen diet has a favorable influence on the eruption, and a high nitrogen diet makes it worse.

5. The nitrogen retention may be explained by the scaling, for which a large amount of protein is required.

Wise<sup>1</sup> has recently written an article on the treatment of psoriasis, with especial reference to the chronic indurated plaques; he devotes his attention to the local treatment alone, admitting by implication that any radical treatment of the disease itself is out of the question. His recommendations are worth reproduction here, since, while they are not new, they represent the method of local treatment that is accepted by the majority of dermatologists; certain additions and criticisms I shall make myself.

1. Remove all the scales. Baths, scrubbings with green soap, and especially green soap poultices to which 5 to 10 per cent. of salicylic acid may be added, should be used. The baths should be taken once or twice daily, and the applications should be kept on between times. Occasionally, when the scaling is not very marked, a milder application, vaselin or olive oil, will suffice. Sometimes the plaques are so thick and the scaling is so intense and persistent that severer measures are necessary. Then I paint the affected surface with dilute liquor potassæ, 1 to 6 or 10, and then apply the green soap poultices. In any case the plaques should be gotten clean. I disagree with the author in his concern lest the inflammatory reaction become too great, and in the recommendation of the employment of calamine lotion or Burow's solution to mitigate it. You want an inflammatory reaction, and an intense one; and I more than suspect that the good effects obtained from chrysarobin are due in large part to the reaction which it occasions. At all events, the psoriatic spots and plaques disappear *pari passu* with the inflammatory reaction of the skin; the quicker and the intenser this is, the more rapidly will the eruption go.

2. Rub in the chrysarobin ointment: Wise insists, and quite correctly, on the importance of vigorous rubbing in the proper way. It should never be left to the patient, or to some sympathetic relative. It should be done by a nurse or other expert, and with a stiff brush; most important of all, it should be done entirely irrespective of the patient's feelings or complaints. The quicker a general dermatitis is gotten up, the quicker will the desired result be attained. In most cases, it is to be done twice daily; and, if need be, a poultice of the ointment should be applied between times. I usually add a little salicylic acid

<sup>1</sup> Therapeutic Gazette, September 15, 1914.

to the chrysarobin ointment; but since, as will be described below, I use the local treatment in conjunction with the internal autoserum treatment in these cases, both the intensity of the dosage and the length of time required for treatment are very much less than is usually employed. Wise recommends Dreuw's ointment: *ol. rusci*, 10; *acid salicyl.*, 20; *chrysarobin*, 20; *lanolin* (anhydrous), 25; *saponis mollis*, 25. Chrysarobin, as George H. Fox has repeatedly called attention to, varies considerably in its efficiency, *i.e.*, in its irritancy, in different specimens. That is of less importance now, however, than was formerly the case; since but very low concentrations are needed with the method of treatment now recommended. Suffice it to say that, under the old method of local medication alone, chrysarobin in strengths of from 40 to 50 per cent. and six weeks of treatment might be required on the average in ordinarily severe cases.

The introduction of the auto-serum injections as an adjuvant to treatment in these unsatisfactory cases has opened a new and promising field of effort. First used for the chronic pruriginous dermatoses by Linser, Ulmann and others, I have employed it in a considerable number of psoriasis cases, as well as in other dermatoses. The results have been recorded from time to time by me;<sup>1</sup> and the later investigations have, in general, corroborated those first obtained. Other investigators have obtained similar results. Thus, MacKee has employed the auto-serum treatment in eleven cases of inveterate psoriasis, giving six serum injections at intervals of one week before starting the local treatment, and then using the very mildest kinds of local applications. He reports practically the same admirable results that I have obtained.

Perhaps the most elaborate article that has appeared, however, is by Howard Fox.<sup>2</sup> He has treated 28 cases of psoriasis with the autogenous serum, seventeen females and eleven males, varying in age from eleven to fifty-four years. The different forms of the disease, such as the guttate, nummular, and the diffuse, were all represented; and varying grades of severity were present. The duration of the eruption had been from two to forty-five years in different cases. All, with two exceptions, were ambulant, and most were dispensary cases. In all, except one case, at least three injections of serum were given at an average interval of from three to five days. This was immediately followed by the local use of a 10 per cent. chrysarobin ointment, the action of which was increased in certain cases by covering the skin with rubber cloth. No internal medication was given, and no particular stress was laid on the diet. The results of the treatment, Fox states, in general were very satisfactory and in some cases decidedly brilliant. *The*

<sup>1</sup> Gottheil, *New York Medical Record*, April 4, 1914; *Journal of American Medical Association*, October 3, 1914; *Boston Medical and Surgical Journal*, June 11, 1914 (Editorial).

<sup>2</sup> *Journal of American Medical Association*, December 19, 1914.

*crucial test of the combined serum and local treatment was shown in cases that had been previously treated by chrysarobin alone. Some of these cases had been treated by the author and his father, Dr. George H. Fox, by vigorous inunctions of chrysarobin combined with dietetic methods, and had failed to show any response at all. After the serum injections, the results of local treatment in certain cases were astonishingly good.*

Fox quotes the expressions of some of the patients; a kind of evidence that I have used myself, and which I regard as important in psoriasis, since the sufferers from this chronic, inveterate, and recurrent dermatosis become quite especially qualified to judge of the effects of treatment in the course of years. They have been everywhere, and have tried everything; they know the names, doses, and effects of all the drugs that are ordinarily used in the disease. Most of them carry around sheafs of recipes; some can give you the favorite treatment of various specialists all over the world. When we recollect that the general health and therefore the patient's judgment, are entirely unaffected, the verdicts of intelligent individuals on a new form of treatment is of value. One of Fox's cases, the wife of a physician, who had suffered from ten previous attacks, and who was thoroughly familiar with all the usual methods of treatment, was delighted with the rapidity with which her eruption disappeared, which she characterized as "perfectly marvellous." Another patient thought the result was "like magic," and added that he had tried "all kinds of medicines and doctors in Europe and America for forty years without any result." Another woman said she "never saw chrysarobin take hold so rapidly and never saw the eruption fade so fast as under the present treatment." The daughter of this last patient also stated that "although this was by all odds the worst attack she had ever had, the eruption had never disappeared so quickly." Another patient, who had suffered from psoriasis for thirty years, said that he could not remember when the disease had been so well under control. Still another had been previously treated for two months with chrysarobin ointment, covered, a good deal of the time, with an impermeable suit of rubber cloth. In spite of this vigorous treatment, the result had been most discouraging. After he had received three injections of autogenous serum, however, and had then been treated with chrysarobin, *a lively dermatitis was caused, and the greater part of the eruption promptly disappeared.* Three other cases had been previously treated and had seemed to be immune to any local action of chrysarobin; the effect of the same local treatment after the auto-serum injections was brilliant. Fox saw no effect at all from the injections alone without the local treatment; in this, his experience differs somewhat from my own, since in most cases they effected some improvement, and in one or two a marked betterment of the disease. But he is very positive that the local treatment was very much more effective after the blood course; and this was shown



in the most obstinate and chronic cases, and in some that entirely resisted the local treatment alone.

The only ill effects that Fox saw after the auto-serum injections was an urticaria in one case; Linser has observed the same in several instances. I have myself encountered a violent reaction, presenting all the symptoms of anaphylaxis, in a case of chronic ulcerative radio-dermatitis in a patient affected with splenic leukemia. It is hardly possible, however, that such phenomena should be anaphylactic, since no foreign serum was used. As Fox says, it is hardly conceivable that any serious ill-effects can result from the injections if proper aseptic precautions are observed. Not only this; all possible dangers of the transmission of other infections, such as syphilis or tuberculosis, are, of course, excluded; and the fact that the patient who receives the injection is also the donor of the blood further simplifies the procedure.

Turning now to the explanation of the action of the serum, Fox admits that the question is a difficult one to answer. It is not due to the power of suggestion alone, as Linser<sup>1</sup> has shown in control cases in which salt solution was injected in place of the serum; and he suggests that it may be due to addition of a complement to the blood in a patient in which this substance was deficient. Ullmann failed to find any deficiency of complement in patients who responded well to the treatment; and also that good results had been obtained from serum that had been entirely deprived of complement and inactivated. Linser further suggested the eosinophile cells as a possible explanation of the beneficial results obtained from the serum. But while he claimed that they were lessened in number under the treatment, other authorities found them increased; and, in any event, we know so little about these cells that speculation as to their role here is useless. That the venesection alone is responsible for the good results attained is a natural suggestion; but comparative tests of blood letting alone, and of blood letting with serum injection, have proved conclusively that this is not the case. A specific reaction of the serum has been thought by some to be the explanation of the effect of the injections; and the results obtained in the treatment of toxic dermatoses of pregnancy with the serum of other healthy women have been cited in support of the contention. But Freund<sup>2</sup> obtained similar results in the toxic dermatoses of pregnancy with horse serum, Hofbauer<sup>3</sup> with pituitary extract, and Rissmann<sup>4</sup> and Eichmann<sup>5</sup> with Ringer's fluid. Pretorius suggests that the curative substances are perhaps protective ferments in the Abderhalden sense, preventing the further formation of harmful intermediary products of metabolism or destroying injurious secretions of the endo-

<sup>1</sup> Samuel. Twangl. Abhandl. a. d. Geb. d. Dermat. Syph., 1913, ii, No. 8.

<sup>2</sup> Deutsche medicinische Wochenschrift, 1911, p. 2419.

<sup>3</sup> Ibid., 1910, p. 1643.

<sup>4</sup> Ibid., 1912, p. 1140.

<sup>5</sup> Münchener medicinische Wochenschrift, 1913, p. 183.

erinous glands. Luithlen<sup>1</sup> found that inflammatory reactions of the skin under external irritation can be favorably influenced by injections of homologous, autogenous, or foreign sera or blood; and also by the parenteral introduction of colloidal substances, such as colloidal salicylic acid and soluble starch; he concludes that the action of the serum in skin diseases has nothing to do with its antigenic function, but is due to the introduction into the system of a colloidal complex causing changes of a character as yet unknown. This is practically the conclusion to which I have come myself, insofar as any conclusion can be reached at present in a subject that is still so dark to us. The serum that we reinject into the veins is not the substance that we take out of them; and this is shown plainly, by the fact that, in certain cases, a distinct, and even a severe, reaction occurs after the operation. It is shown also by the fact that the serum effects changes in the tissues and especially in the skin that cause it to react differently and more vividly to remedial agents than is usually the case. I believe that the cause for this will be found to be some action, stimulating or inhibitory, on the ductless glands or their secretions; though I cannot as yet advance any definite reasons or explanation therefor.

Be that as it may, I entirely agree with Fox in that the combined serum and local treatment, concerning the latter of which I shall have a word to say later, is a new method of real value in treating individual attacks of psoriasis and other dermatoses. It is still too early to say whether it has any effect on recurrences. They do occur, as might be expected; but the evidence at my disposal, which has not yet been published, is to the effect that relapses are postponed, occur at longer intervals, and are less severe as time goes on. Fox's conclusions are as follows:

1. Autogenous serum, when used alone, does not appear to be of value in the treatment of psoriasis.

2. It is of decided value when used in conjunction with chrysarobin. Obstinate cases of psoriasis that have long resisted vigorous treatment with chrysarobin alone will often yield to this remedy when injections of the autogenous serum are also given.

3. Intravenous injection of autogenous serum, if properly given, are entirely devoid of danger.

4. The technic of preparing the serum and giving the injections is comparatively simple.

Hilario<sup>2</sup> reports excellent results in the treatment of five cases of psoriasis by the combined method of injections of the autogenous serum and inunctions of a 2 per cent. chrysarobin ointment. He concludes as follows: "The auto-serum plays a very active influence in

<sup>1</sup> Wiener klinische Wochenschrift, 1913, p. 653; Wiener medicinische Wochenschrift, 1913, p. 2375.

<sup>2</sup> Journal of Cutaneous Diseases, 1914, p. 780.

the treatment of psoriasis in the way of reducing the resistance of the psoriatic tissue, thereby rendering it more apt to be acted on by the chrysarobin, in weak percentages."

Spiethoff's<sup>1</sup> further experience has confirmed the excellent results previously reported by him from the reinjection of the patient's own serum in various skin affections, especially in eczema and the itching dermatoses. He has never had any mishaps with his intravenous technic; and he gives frequent injections, daily or sometimes twice daily, using 100 or 200 c.c. of blood each time, and keeping this up sometimes for weeks. There are no after-disturbances; so that the injections can be done on out-patients. He claims for this autoserotherapy all that can be obtained from simple serotherapy under any conditions; while the advantages of freedom of danger from anaphylaxis and of contracting disease from another person, as well as the saving of time, are important points in its favor. He explains the results as due to a modification of the reaction of the skin.

Swann<sup>2</sup> reports a case of obstinate urticaria associated with joint pains and a purpuric eruption which did not yield to any of the ordinary methods of treatment, and in which the coagulation time of the blood was markedly increased. From the fact that the coagulation time became normal when a drop of foreign blood serum was added to the patient's blood, Swann decided to try serum injections; six were given, the blood being obtained from the patient's brother, some 100 c.c. being administered in all. After the fifth injection, the symptoms all disappeared, and the coagulation time of the blood became normal. Seven and a half months had passed when the report was written, and the patient had remained perfectly well. This, of course, was not an auto-serum treatment; but the case is cited as a fresh example of the hopefulness of this new field of therapeutic effort in dermatology.

In a general way then, it may be said, that the results which I published a year or so ago have been confirmed by other observers; it must be remembered, however, that I never claimed that the method was in itself a curative one when used alone. I have seen improvement, but never recovery, under these circumstances; I have always used local remedies in conjunction with the injections. What I have claimed, however, was the following: That the auto-serum therapy is a powerful aid in the treatment of a number of obstinate dermatoses, including psoriasis, chronic urticaria, chronic eczema, pus infections, and dermatitis herpetiformis; that, with its aid, entirely unexpected and unusual effects can be gotten in many cases from ordinary local medication of the mildest kind; that it exercises a profound, though as yet unexplained, action on the skin; and that it is a valuable aid in the treatment of a

<sup>1</sup> Medizinische Klinik, January 10, 1915.

<sup>2</sup> Journal of the American Medical Association, February 27, 1915.



number of very obstinate and even hopeless dermatoses. In the light of these confirmed statements, a recent article by Ravitch<sup>1</sup> is of interest.

Ravitch claims that since the action of the auto-serum cannot be explained, since we are unable to understand why the withdrawal of the blood, the separation of its serum, and the return of this serum to the body, could cause any reaction in the organism, its use is neither rational nor scientific. And this in the face of the fact which he himself calls attention to, that White, in his chairman's address before the Section of Dermatology of the American Medical Association in 1912, stated that only 40 per cent. of the common non-infectious dermatoses were of known etiology. The proportion of cases in which we have a definite scientific basis for our etiological procedures is even less; and empiric experience alone is the basis on which most of them rest. The value of auto-serum therapy, therefore, depends solely on clinical evidence; and Ravitch himself admits that it should be accorded a place in therapeutics, though applicable, in his opinion, to a few selected cases only. His reasons for these conclusions, to each of which I shall reply at once, are the following:

1. Intravenous injection is rather a dangerous procedure, particularly when from six to ten injections must be administered. This is opposed to the testimony of all the other observers, and of serologists generally. Fox<sup>2</sup> says that it is entirely devoid of danger if properly performed; I have done multitudes of these injections without a single mishap.

2. Only in a minority of individuals, and especially seldom in women, do we find cubital veins suitable for repeated venous punctures and injections. My experience is that it is very exceptional indeed to find cases with impossible veins in the cubital region; since the same vein can be used repeatedly, and even the same puncture point, it is only necessary to find one or two that are good; and finally, that their are other superficial veins outside those at the bend of the elbow which can be used.

3. In repeated venipunctures we must beware of endophlebitis. Endophlebitis should not occur with a proper technic; the mere aseptic puncture of a vein does not occasion it; and if it does happen it merely means that the special vein in question will probably become occluded and useless for intravenous purposes.

4. The technic is not simple or void of danger. Here again Ravitch is absolutely at variance with common experience. Of course, any intravenous procedure must be done with great care; under which circumstances all serologists will admit that it is both simple and safe.

5. The length of time required, and the expense incurred are disadvantages whose validity I entirely admit. But I do not recommend

<sup>1</sup> Journal of the American Medical Association, April 10, 1915.

<sup>2</sup> Loc. cit.

the method for dermatoses that are readily curable by simple and cheaper methods.

6. We are in total ignorance of its action and dangers. The first objection does not hold at all, and the second has been disposed of above.

7 and 8. The percentage of cures is small. . . . This is no objection in dermatoses that are practically incurable otherwise. I have received a number of communications, oral and written, from practitioners in various parts of the country, who have used the auto-serum treatment in various obstinate dermatoses. Most of the experimenters have been satisfied with the result attained; perhaps it is natural that I should hear of favorable, rather than unsatisfactory, experiences. One of them, however, with the writer's permission, I shall quote, since it is a model of conciseness and is very illuminating. From the United States Naval Hospital at Bremerton, Washington, Dr. O. J. Mink reports the following case:

1. The patient was a prisoner during the six months of observation, and hence his habits, diet, and conditions of living were easily controlled and observed.

2. He received no treatment during or for some time previous to the auto-serum treatment, thus making a spontaneous or other cure improbable.

3. The case was a very severe one of urticaria. About every seven to ten days the man had a severe general eruption, which was often severe enough to close his eyes.

4. After the first injection of 40 c.c. of serum, a moderately severe attack occurred about the tenth day. A second injection was given four days later, 40 c.c. With the exception of a few spots during the following week, the man has had no trouble since (about eight months).

In concluding my review of the year's work in this new dermatotherapeutic direction, I may say that I fully recognize the validity of some of the criticism that has been directed against it. It has not proven directly curative, save in some exceptional cases, such as those of dermatitis herpetiformis. It is, however, a very powerful help in a number of cases that tax our therapeutic efforts to the utmost, and enables us sometimes to get results unobtainable by other means. It is necessarily troublesome and costly, and hence is not suitable for dispensary work, or for patients whose means and time are very limited. But in the paucity of efficient therapeutics which our specialty suffers from, it is often very valuable; and it offers a new field, and one of great promise at least, for our efforts in this direction.

**Bromoderma.** Bromine is one of the commonest causes of drug eruptions, and this apparently without reference to the amount employed; years ago I recorded a very severe case due to the ingestion of two 2 grain doses in a child. It most often appears as the familiar bromide acne; but occasionally it is echthymatous or furuncular,

and in exceptional cases it is tubercular or bullous. This absence of uniformity in drug eruptions (the dermatitis medicamentosa of the dermatologists) renders its recognition difficult at times, and justifies the recording of unusual types of exanthem. D. King Smith<sup>1</sup> publishes two unusual cases of essentially similar type. In both, it began with the appearance of small papules and pustules on the lower extremities, which increased in number and coalesced until they formed extensive granulomatous areas covered with dark crusts (Fig. 11). The resemblance to a blastomycosis or a tuberculosis verrucosa was marked; but no fungus or evidences of tubercle bacilli were found, and both patients recovered slowly when the bromide was stopped. In these instances, the dose of bromide had been fairly large, and had been continued for a long time.

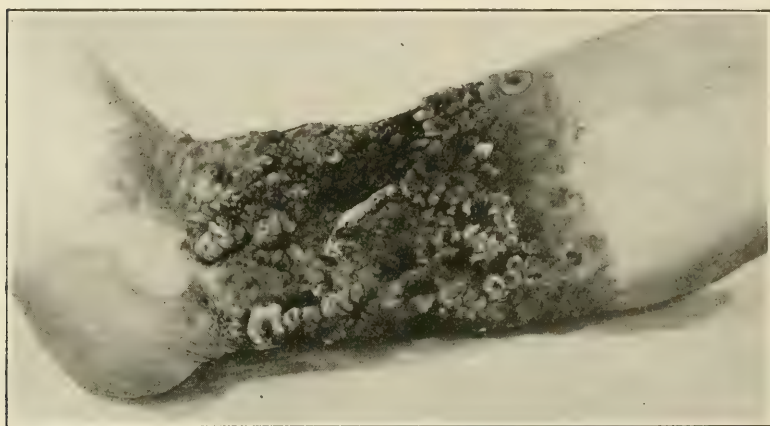


FIG. 11.—Bromide eruption. (Case of D. King Smith.)

**Chilblain and Frostbite.** Last winter's war in Europe afforded opportunities for the study of these affections on a large scale. Wieting<sup>2</sup> differentiates two forms of affection of the skin and the deeper tissues due to the influence of cold. There is first the real "freezing," in which the tissues die entirely and directly from the effects of the cold. Then there is the less intense effect of the same agent resulting in "ischemic gangrene," the death of the affected tissue being occasioned by the entire cutting off of the arterial circulation. The latter is the commoner in temperate regions. The symptoms may be quite slight, a little redness and an immoderate itching being the only signs. Severer cases show marked redness and swelling, giving the picture of chilblains or pernioes. Still worse cases, vesicle or bulla formation associated, in the most advanced cases, with blueness and edema of the entire

<sup>1</sup> Canadian Practitioner and Review, April, 1915.

<sup>2</sup> Dermatologische Wochenschrift, September 5, 1914, p. 1076.



affected area. Cases of even extensive "blueness" with only slight depression of the local temperature all recovered; but when the temperature of the part was greatly depressed, it was found that gangrene invariably ensued. Febrile inflammatory processes from secondary infection through fissures or of gangrenous parts were common. Most of the cases ran very severe courses; which Wieting attributes to the fact that the soldiers were exposed, not only to the influence of the cold, but were wet for many days at a time, and could not change their clothing, very often for weeks.

The author advises a very conservative treatment of these cases. Only in case of marked phlegmon or threatened general sepsis are operative measures to be undertaken. Even very great pain is no indication for interference. Packing the affected part in cotton, local treatment with iodine, dermatol, or iodoform, elevation of the part, and the careful avoidance of anything that may occasion pressure, such as splints, are the measures that he recommends.

Blunck<sup>1</sup> advocates the treatment of these conditions with a modified Binz calcium chloride ointment, as follows: ac. carbol. liquef., 0.25; calcar. chlorat. 1.0; ungt. paraff. ad 10.0. The galvanic current is the means that Chuiton employs by preference.<sup>2</sup> The hands or feet, the parts most often affected, are placed in separate vessels of salt water, and a galvanic current, as strong as the patient can bear, is passed through the fluid. In marked cases, 5 to 6 milliamperes is about the limit. The sessions are given daily, and each one lasts twenty minutes. Jacquet and Debat<sup>3</sup> employ what they call the biokinetic method in treating these cases. This means the active mobilization of the affected member, which is held while being moved in forcible elevation for five minutes at least eight times in the course of the day. Good results without relapses or complications were noted by both these observers.

There is no objection to these suggestions; yet I cannot regard them as any improvement on the plan advocated in this review four years ago.<sup>4</sup> The reader will find there an epitome of a method that has been employed for a long time, and which I see no occasion to change.

**Furuncles and Furunculosis.** It is safe to say that no one of the commoner skin diseases gives the practitioner as much trouble and is so unsatisfactory to treat as the ordinary "boil"; more especially since it does not usually occur as an isolated phenomenon, but is most often merely one of a succession of these infections, a single member of an apparently interminable series of them. The subject of its treatment was considered at some length three years ago in these pages,<sup>5</sup> puncture,

<sup>1</sup> *Therapeutische Monatshefte*, 1914, No. 4.

<sup>2</sup> *Archives d'électricité médicale*, 1913, No. 352.

<sup>3</sup> *Bulletin médicale*, 1914, No. 20.

<sup>4</sup> *PROGRESSIVE MEDICINE*, September, 1911, p. 110.

<sup>5</sup> *Ibid.*, September, 1912, p. 114.

cupping, and antiseptic dressing being the chief therapeutic measures recommended. Pollitzer<sup>1</sup> has recently published a resume of his views of the subject; and the recent development of serum therapy in dermatology warrants some additional remarks at the present time.

A boil has nothing at all to do with "blood impurities," so called, or with any internal condition save in that any systemic depression affects skin resistance and renders it more accessible to the ever-present source of infection. It is in every case occasioned by the entrance of the staphylococcus aureus into a hair follicle, and its growth there. It may be produced at will by rubbing this organism into the skin; but it is only when it enters that organ through the hair duct that it produces the typical furuncle; when, through lesions of the skin, the organism is introduced into the loose subcutaneous cellular tissues, cellulitis or a diffuse phlegmon occurs. In the true boil, the microörganic growth occurs only in the pilo-sebacious follicle and its immediate surroundings. The central part, the hair follicle and the tissue immediately surrounding it, which bears the brunt of the microbic invasion, is killed *en masse*; it is loosened by the autolytic liquefaction that occurs around it, and appears as the "core" in the pus. No matter how large a furuncle may be, it differs from a carbuncle in that it is a circumscribed peripilous infection with a single opening corresponding to a hair follicle mouth. In carbunculosis there is a diffuse invasion of the cellular tissue, with a number of openings on the surface. The seriousness of this latter condition and the necessity for prompt surgical interference are generally recognized. Furunculosis, on the other hand, is commonly considered an unimportant affection; yet its chronicity and obstinacy, together with its importance in the presence of affections of the internal organs, more especially diabetes, render it worthy of our attention.

The infection occasioning the first furuncle comes, of course, from without; but, once established in the patient, the individual has a private staphylococcus factory of his own, and reinfects himself locally continuously. Local pressure and friction play their part in forcing the microbe into the hair follicle; hence furunculosis is commonest on the neck in men and around the waist in women, where collar and corset provide the best conditions for its occurrence. Such factors must, of course, be eliminated as far as possible; and *a priori* it would seem to be easy to prevent continuous pilary infection by cleanliness. As a matter of fact, however, the procedures and the agents usually employed to cleanse the skin thoroughly inevitably irritate it to some extent, and so make it a better soil for microbic growth; and I have often thought that the rubbing and washing may occasionally force microbes that are at the orifices of the hair follicles into their lumen rather than remove them from the surface of the integument. The very cleanliest persons

<sup>1</sup> Post-graduate, November, 1914.

sometimes suffer from furunculosis. The therapeutic lesson for us, however, is to the effect that not frequent washings, hard scrubbing, and violently detergent soaps, but gentle cleanliness with a bland soap, and frequently renewed and non-irritant antiseptic wet dressings, are the means to be employed to prevent the spread and the continuance of the infective process.

Pollitzer believes that painting the surface of a coming furuncle once daily with tincture of iodine often aborts the boil; this has not been my experience. I prefer and strongly recommend that every suspicious papule should have a very minute incision made in its top, and then be cupped vigorously. This author is also a believer in the efficiency of staphylococcus vaccines, and recommends that an injection of 400 million dead staphylococci be given at once; he thinks the stock vaccines as useful as the autogenous preparations, and of course they are much more readily obtainable. After that four or five further vaccine injections should be made at intervals of four or five days. He believes that they increase the skin resistance and have a favorable influence on the course of the disease. My own observations have not convinced me of the truth of this fact. I have used vaccines, both autogenous and stock, in a number of cases of furunculosis; and I cannot affirm that they have done any special good. During the last two years I have been giving these patients auto-serum injections, with the idea of increasing their dermal resistance to microbic invasion. I am not prepared as yet to put on record any definite conclusions as to their value; in some cases they have apparently helped the patient a great deal; in others, their effort has not been determinable. However, the cases of furunculosis that come to me, in the vast majority of instances, have had their disease for a very long time, sometimes for many years; and they have all had the vaccine treatment, occasionally several courses of it. Under those circumstances, and in view of the small amount of success I have had myself with it in former years, I use the auto-serum injections in their place. I usually give six to eight serum injections, drawing from 60 to 200 c.c. of blood, and introducing from 35 to 125 c.c. of serum, in accordance with the amount recovered from the circulating fluid. The details of the method will be found in last year's review.<sup>1</sup>

Locally, Pollitzer recommends a "plastic" application which is somewhat complicated in formula and difficult to make properly. He says plainly that it is useless to give the patient a prescription and tell him to apply the material. It will take the druggist a day to make it, and, at his first attempt, he will probably make it badly. It should be made up in quantity, and kept by the physician; in paraffined paper it keeps indefinitely. It is applied spread on a piece of common muslin.

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1914, p. 140.



The advantages claimed for it are that it acts as a cutaneous splint to protect the tender area; it softens the epidermis, and relieves tension as effectively as an incision; it softens and removes the little crust at the top of the boil, and facilitates the discharge of pus; and finally, it serves as an occlusive dressing and prevents further auto infection. It was first suggested by H. G. Klotz, of this city; and its formula is as follows: Emplast. diachyli, 60; emplast. saponis, 25; ceræ japonicæ, 2; petrolati, 8; ac. salicyl. 5 M. ft. emplast. I have had no experience with it myself, being satisfied with the boric acid or mild bichloride wet dressings that I recommend; but these latter are undoubtedly troublesome in ambulant practice; the above application is a favorite one with a number of dermatologists; and it may be useful to replace the more ordinary methods.

**Favus and Ringworm of the Nails.** These are supposed to be rather rare conditions; yet Foster<sup>1</sup> found not less than 101 such cases among the aliens arriving at Ellis Island, N. Y., during the first eight months of the present year. We not infrequently see cases of the kind in public practice; for it is among the poorer, and especially among the foreign-born, portion of our population that chronic and neglected parasitic disease of the scalp is most common, and hence nail infections most frequent. In spite of Heller's<sup>2</sup> monumental work on diseases of the nails, our knowledge of this branch of dermatology is limited, and our therapeutics is unsatisfactory: as the records of any dermatological society will show. Foster's well illustrated article is therefore a timely one.

No distinction can be made clinically between infection of the nail with the ringworm and with the favus parasite; the visible nail changes are so alike that even the dermatologist cannot clearly differentiate them; and microscopically the achorion and the trichophyton are practically indistinguishable. The demonstration of the presence of mycelium and spores suffices to make the diagnosis of onychomycosis, which is quite sufficient, since the treatment is the same for the two affections. If favus or ringworm is present anywhere else on the body, or if evidences of past favus are seen on the scalp, a more exact diagnosis may be made in accordance with this evidence; if nothing of the kind can be found, the case is probably one of ringworm, since ringworm of the scalp disappears spontaneously and without trace after a time in the great majority of cases, while favus leaves evidences of its past existence in the scalp in most cases. Classified in this way, Foster found that 84 out of his 101 cases were due to ringworm, and 17 to favus. These 101 cases of parasitic disease of the nails were discovered in 521,366 aliens who were examined; being about one case in five thousand.

The nails affected were thickened, brittle, and even caseous, their natural color and transparency were lost, and they were opaque and

<sup>1</sup> Journal of the American Medical Association, August 22, 1914.

<sup>2</sup> Die Krankheiten der Nägel, Hirschwald, Berlin, 1900.

dirty white or yellow in appearance. As might be expected, the process began at the distal end of the nail, and gradually spread up to its base; the diseased, laminated, and thickened portions, being very brittle, were gradually broken away by the slight traumata incidental to the patient's ordinary avocations. In occasional cases, the parasitic affection spreads to the palmar surfaces of the fingers or to the palm itself; the skin of which is thickened and scaly, without, however, showing any of the characteristic signs of ringworm or favus of the non-hairy parts. I consider this as a concomitant eczema occasioned by the spread of the parasitic growth. I append two characteristic illustrations from Foster's article (Figs. 12 and 13).



FIG. 12.—Ringworm of nails. (Foster's case.)

The differential diagnosis of onychomycosis, as in the absence of definite criteria to distinguish ringworm from favus of the nails the affection had better be called, is a matter of difficulty in many cases; syphilitic onychia resembling an infected mycosis very closely sometimes, and the nails being subject to various atrophic and hypertrophic changes that may at times closely resemble parasitic disease. Besides this, the nails may be affected in eczema, psoriasis, lichen planus, and various constitutional diseases. In addition to the physical appearances of the mycotic nails above described, and the finding evidences of the presence of ringworm or favus, past or present, elsewhere on the body, the diagnosis is made by microscopic examination; and, luckily, this is very easily and readily done.

Minute scrapings from the affected nail, especially from the deeper parts, are taken; the superficial lamellæ should not be employed, since these may contain no parasite, even in a marked case. The upper lamellæ must be broken off or scraped through to obtain proper material. After breaking up the fragments in distilled water with needles, the cover-glass is put on and the preparation is put under the microscope and focussed with a dry, high power objective. A drop of 25 per cent. potassium or sodium hydroxide is then run under the cover-glass by means of filter paper. This begins to clear the nail fragments and more of the alkali is applied as required. If the clearing is slow, gently



FIG. 13.—Favus of nails. (Foster's case.)

heating the slide over an alcohol flame will hasten the process. The nail substance itself is dissolved, or becomes transparent; and the mycelium appears as slightly green, transparent, branching threads composed of spore-containing cells (Figs. 14 and 15).

The treatment of onychomycosis is, in general, very unsatisfactory; partly on account of the resistance to the action of parasiticide agents by the hard nail tissue, and partly because these patients belong mostly to the laboring classes, and cannot take care of their hands and avoid traumata, but must work for their livings with them. Some brief consideration of this subject was given in this publication a number of



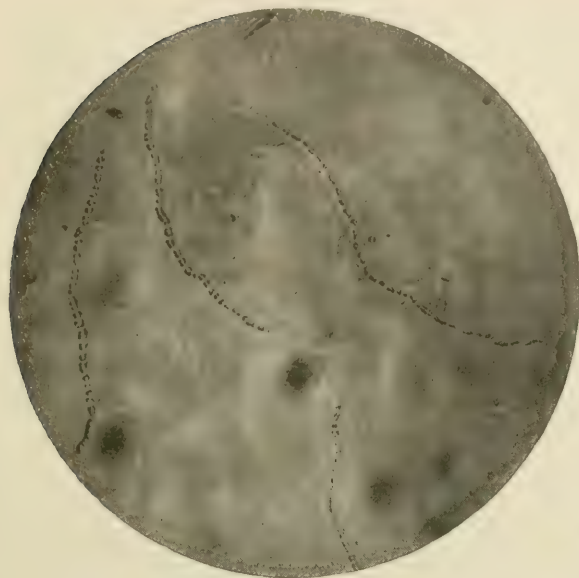


FIG. 14.—Favus organism.  $\times 285$ . (Foster's case.)



FIG. 15.—Ringworm organism.  $\times 330$ . (Foster's case.)

years ago.<sup>1</sup> Whatever method of treatment is employed, softening the nail by soaking in hot water, mild alkaline solutions, etc., and scraping away as much of the diseased tissue as possible is requisite. The x-ray is perhaps the best remedy to employ; but it should be used by an expert, so as to avoid troublesome and even dangerous inflammatory reaction, and permanent loss of the nails. I use the Cornell tube only, and carefully protect the rest of the fingers and hand.

The majority of cases must have local medicinal treatment; and this can be helped and intensified by using rubber finger cots continuously, when possible, over it. Foster admits that his own experience with medication, though limited, has been disappointing. My own experience is that the persistent use of a strong sulphur ointment, varied occasionally by the employment of tincture of iodine, a 5 per cent. chrysarobin ointment, or a 10 per cent. pyrogallol ointment, will do as well as anything. Stelwagon recommends dipping the finger ends in a solution of mercuric chloride, 1 to 3 grains to the ounce, for five or ten minutes daily, allowing it to dry in, and then enveloping the parts in a 1 to 8 calomel or white precipitate ointment. In any case, the treatment is long and tedious, and the parasite can still be demonstrated in the scrapings in many cases that are apparently clinically cured. Avulsion of the affected nails and the application of a mild germicide ointment to the nail bed is justifiable in some cases.

Foster finally calls attention to the danger of infection from these cases of onychomycosis, which he considers to be great. I can hardly agree with him in this. Quite a number of cases have come under my observation and that of my assistants in the course of years, both in children and in adults, and I do not recollect any instances of spread of the infection to members of the patient's family, fellow workmen, or others coming into ordinary contact with the bearers of the parasite. It must be remembered that the fungus is deep down in the tissues, under the hard horny lamellæ, and that there is little chance for the scattering of fragments on receptive soils, such as the scalps or skins of children. The mere fact that the immense majority of ringworm and favus cases do not have their nails infected, though they undoubtedly apply their finger nails to the irritated parts frequently, would tend to show that exceptional conditions, such as injuries to the nail itself, is probably a necessary prelude to its infection. When the parasite reaches the deeper tissues and grows there, it is more or less encysted, as it were; and exceptional conditions are required to free it and to permit its being conveyed to others.

**Maculo-tubercular Leprosy.** Leprosy is still sufficiently rare in the United States to justify the recording of individual cases, more especially

when they are found in regions where the disease is new. Jamieson<sup>1</sup> came upon the patient here figured (Fig. 16) in El Paso, Texas, in a Mexican of the Indian type, forty years of age, and married; he lived with his father, mother, and sister, none of whom showed any evidences of the infection. The eruption on the face and genitals was of the common tubercular type; macular lesions were present on the body; the cartilaginous septum was perforated and crumbling, the turbinates were gone, and the epiglottis, larynx, aryteno-epiglottic folds, and ventricular bands, as well as the larynx itself, were infiltrated with leprous nodules. Typical *lepra bacilli* were found in an incised nodule of the skin. An attempt was made to segregate this patient, but he decamped, and disappeared. In last year's issue of this review<sup>2</sup> I discussed the subject of the measures that the general government should



FIG. 16.—Maculo-tubercular leprosy. (Jamieson's case.)

take in view of the increasing number of sporadic cases of the disease that are being reported.

**A New Treatment for Lupus Vulgaris and Other Dermal Tuberculosis.** Since the advent of the light treatment of tuberculosis of the skin instituted by Finsen, the number of cases of lupus vulgaris has apparently decreased in this country. It was never as large as it apparently is in Europe; and most of our American cases have been among the comparatively small proportion of our population that is of foreign birth. Of late years, however, it has become an infrequent disease, even in the clinics of our seaboard cities, where the population is largely of European origin. There is no reason to suppose that there is anything

<sup>1</sup> Journal of the American Medical Association, June 3, 1914.

<sup>2</sup> PROGRESSIVE MEDICINE, September, 1914, p. 133.



like the proportion of cases here that there is in Germany; where the Imperial Commission of 1908 stated that there were 11,354 recorded cases, and estimated that, making due allowance for unrecognized, undiagnosed, and non-reported cases, there were approximately 33,000 cases in the Empire. The same proportion, according to the population, would give us 50,000 cases; whereas common experience, and the dermatological statistics that have been collected, would lead us to believe that we have only one-tenth of that number of cases, or even less. Nevertheless, the obstinacy and seriousness of cutaneous tuberculosis make effective treatment of the condition a matter of concern; and we welcome a new method, especially when it is one that can be employed by the practitioner.

The very fact that local remedies of every possible kind, mild and stimulating ointments, caustics, radium, the Röntgen ray, the Finsen treatment, the Kromayer light, the Hollander superheated air, the Paquelin and galvanocautery, solid carbon dioxide, curettement, linear scarification, and surgical extirpation, have all been recommended and undoubtedly have all been useful in certain cases shows, on the one hand, that we have no universally applicable treatment, and, on the other, that we must not relax our efforts to simplify those already at our disposal and to find new ones. The trouble with most of these remedial procedures is that they involve the use of costly and intricate apparatus, and the cases are not sufficiently numerous to justify the expenditure of money and time involved. The fact is that most of the lupus vulgaris cases, and especially the advanced and neglected ones, occur among the poorer classes of our population who cannot pay the expense necessarily incurred.

Heidingsfeld<sup>1</sup> therefore does the profession a good service when he details his experiences with a common remedy in the disease, more especially when he says that the results attained are equal, if not superior, to those that he has seen from other methods in continental cities. He claims cosmetic results, for instance, as good as those obtained at the Finsen Institute at Copenhagen and those from the mercury quartz lamp, both generally conceded to be of the highest order; and better results than those from radium, the Röntgen ray, mesothorium, and thorium X. No equipment is needed; results are surprisingly prompt; improvement is almost invariably noted in a few weeks, and a cure in the more moderate cases is effected within six months or a year. To the non-dermatologist it may seem strange to speak of such periods as short; but they are so in the treatment of lupus vulgaris. The Finsen treatment takes years; and a lupus of any extent at all that is cured inside of twelve months is a remarkably successful case. Pain, he claims, is momentary, and transient; it is a slight burning

<sup>1</sup> Journal of the American Medical Association, October 17, 1914.

and singeing, readily tolerated by children as well as adults. Cases that have been treated with the remedy which he recommends have now remained well for two years, and have shown less tendency to relapse than those that have had light and radium treatment. He claims, as peculiarly noteworthy, the fact that the actively spreading and usually very persistent borders respond to the treatment with almost as much promptness as the partially cicatrized centers.

The remedy is the ordinary trichloroacetic acid, of which a saturated solution is made by the addition to an ounce of the crystals of ten drops of distilled water. The drug is almost deliquescent, so that a very small amount of water suffices to dissolve it. By means of a small cotton swab, the solution is applied to each nodule of the disease. It appears to Heidingsfeld to exert a selective action, not acting as vigorously on the intervening normal or scar tissue as on the infiltrated area. To relieve the pain after the application, he applies the following, which tends to hide the glaring whiteness that follows the application of the remedy: Sulphurated potassa (?), zinc sulphate,  $\bar{a}\bar{a}$  1 part; zinc oxide, 10 parts; lime water, 15 parts; distilled water, enough to make 40 parts; powdered carmine, enough to color pink. Areas as large as a silver quarter may be treated at one time, and the applications may be repeated at seven to fourteen day intervals. The nodule becomes the site of superficial crusts which exfoliate in five to ten days. The general congestion diminishes, the infiltrations lose their intensely red color and diminish in size; ultimately they disappear. Mucous membrane lesions within the lips and upon the nose yield with equal promptness and success. I append two of pictures of two of Heidingsfeld's cases before and after the trichloroacetic treatment (Figs. 17, 18, and 19).

I have not had any personal experience in the treatment of lupus vulgaris with trichloroacetic acid; the cases of that disease that have come under my experience in private practice have been comparatively few, and I have used carbolic acid and iodine locally in most instances. But I have used trichloroacetic acid very extensively in lupus erythematosus, in which affection it was my remedy of choice before the solid carbon dioxide was proposed by Pusey. I am afraid that, in spite of Heidingsfeld's statement to the contrary, most patients will agree with me that its use is very painful indeed, and the pain lasts for a good many hours. Especially is this the case if extensive surfaces of skin have to be treated. The whiteness which the author refers to is a disadvantage, especially in women; and it persists for many days, and can hardly be effectively covered up. Not five to ten days, in my experience, but rather ten to twenty, are required before the scabs resulting from the application fall off. Nevertheless, and in spite of these disadvantages, I used the drug for many years, and am satisfied with the results attained. I should not hesitate to employ it in lupus vulgaris.

So far as I know, there are no other disadvantages or dangers attendant upon its use; and, after all, the pain and deformity, both temporary,



FIG. 17.—Lupus of forty-two years' duration. (Heidingsfeld's case.)

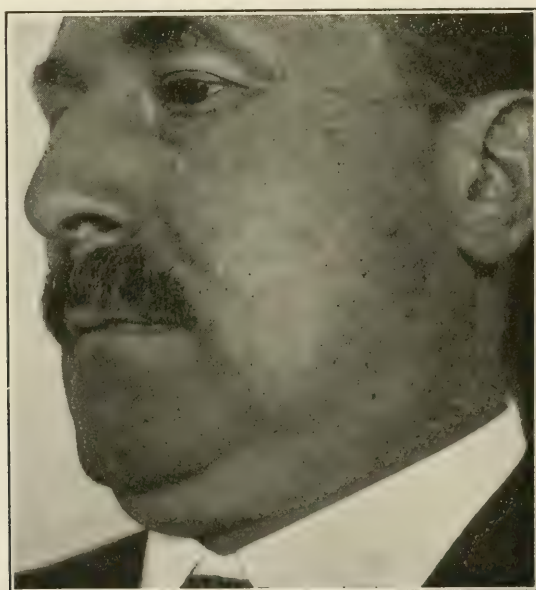


FIG. 18.—Same case as Fig. 17, after treatment with trichloroacetic acid.

are almost negligible factors in a disease of such obstinacy and such seriousness.



**Oriental Sore in America.** Oriental Sore, Aleppo Button, Biskra Button, or Delhi Boil, common enough in various quarters of the Old World, was first recognized in the Western Hemisphere in Brazil, in 1895; and more recently cases have been reported in other parts of South America, in Mexico, and, which is of more immediate importance to us, in the Canal Zone. The Southern United States present, in certain sections, the conditions necessary for its development, it can probably appear anywhere between 40 degrees North and South, wherever the mean annual temperature is 64° F. or more. The acquisition of semi-tropical and tropical territory by the United States, and the exploration and development of tropical America is certain to bring the disease to our notice with increasing frequency. McEwen<sup>1</sup> has recently found a case in Chicago. The patient had been on a scientific



FIG. 19.—Oriental sore. (McEwen's case.)

expedition in South America in 1912, and had been infected on the helix of his left ear. It had been treated ineffectually with solid carbon dioxide, bichloride lotions, and various other topical applications. When first seen by McEwen, it presented the appearance shown in Fig. 9. There was a superficial ulceration 4 by 2 cm. in size, with irregular sloping margins and a granulomatous non-indurated base. There were no subjective symptoms, and no signs of syphilis. Leishman bodies, characteristic of the Aleppo Button, were carefully sought for, but were not found at first; while an intracellular diplococcus, resembling the gonococcus very closely, was present in abundance. Finally, however, the parasite of *Leishmania tropica* was demonstrated in abundance.

<sup>1</sup> Journal of Cutaneous Diseases, April, 1914.

The malady, as seen in the Western hemisphere, is most liable to be mistaken for an epithelioma or a rodent ulcer, or a specific lesion. Its origin in, and limitation to, endemic districts, its site on the non-covered parts of the body, its beginning as an itchy papule, its very slow growth into a desquamating and crusted nodule, its final ulceration, and the entire absence of other symptoms and the non-involvement of the general health, are fairly characteristic. In case of doubt, however, the microscope must decide the question. The prognosis is always good; recovery takes place ultimately. Scrupulous cleanliness and the persistent use of the tincture of iodine locally have given the best therapeutic results. McEwen's article contains a full bibliography of the American cases; and I append two of his illustrations, showing the diplococcus and the Leishman bodies (Figs. 20 and 21).

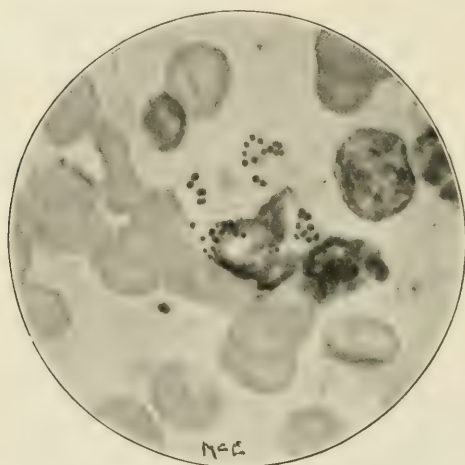


FIG. 20.—*Leishmania tropica*. (Oriental sore.) (McEwen's case.)

**The Seborrheic Keratoses.** Under this somewhat unfamiliar title, Sutton<sup>1</sup> calls attention to a very common condition, and one of extreme importance in view of its consequences. Senile pigmentations, warts, and localized areas of seborrhea, especially on the exposed parts of the skin, are very common conditions in advanced life, and occur sometimes at earlier ages; they are regarded as unimportant minor deformities, both by their carriers and by medical men in general. Yet the frequency with which they develop into carcinoma is well known; and the dermatologist regards them with more than suspicion, and insists on their vigorous treatment.

These senile changes in the skin are apparently occasioned by long-continued exposure to strong sunlight and sudden atmospheric changes; hence they are commonest among persons of outdoor occupation. With

<sup>1</sup> Journal of the American Medical Association, January 30, 1915.

that unfortunate tendency to apply local descriptive terms to dermatological conditions, the word "seaman's skin," has been applied to them; but Sutton claims that they are commoner among the farmers on the Kansas plains than among sailors; and they are frequent enough on our Eastern coast. The skin changes begin with the appearance of small, oval or brownish macules on the face, scalp, and backs of the hands, though the interscapular and sternal regions are not infrequently involved. The lesions grow into flat-topped, oval or rounded, grayish or brownish-yellow elevations, with a firmly-adherent, greasy scale. If the scale is carefully removed, its under surface will be found studded with minute projections which extend into the dilated mouths of the sebaceous follicles; showing the seborrheal involvement that is so marked in the condition. They form insignificant cutaneous lesions,

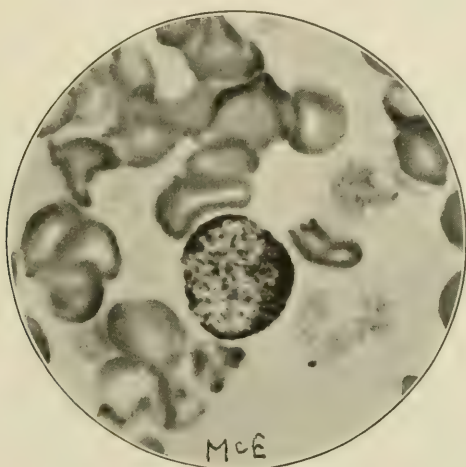


FIG. 21.—Leishman bodies, from a case of Oriental sore. (McEwen's case of *Leishmania tropica*.)

apparently of the most innocent nature. Yet they are very liable to be injured by accident, or in shaving; or the patient with his finger nails removes the repeatedly-forming greasy crust, which sometimes occasions moderate itching. In a certain, and not small, proportion of the cases, carcinomatous degeneration finally sets in; and Sutton describes a number of cases of the kind, with pictures of the seborrheal keratoses side by side with the active cancerous lesions that have developed from some of them (Figs. 22 and 23). The picture is completed by Fig. 24, which is from an ordinary seborrheic wart that has undergone malignant change. The importance of an early and effective treatment of these warts is therefore apparent.

Sutton recommends the use of any bland grease, such as rose-water ointment, together with the avoidance of all irritation, (alkaline soaps,





FIG. 22.—Epithelioma following a seborrheic keratosis. (Sutton's case.)

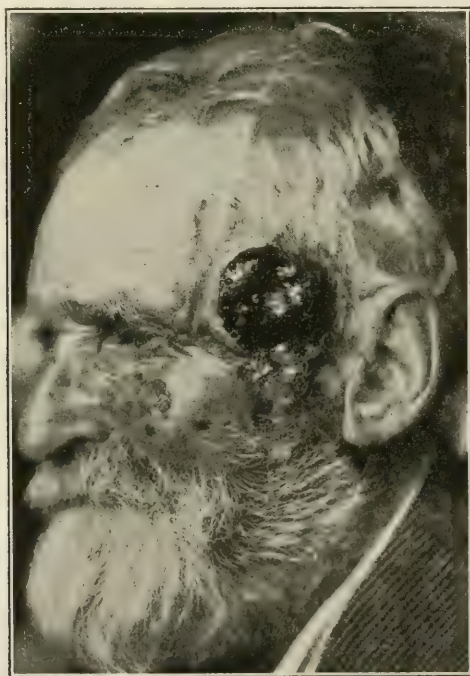


FIG. 23.—Carcinoma following a seborrheic keratosis. (Sutton's case.)

too close shaving, etc., for the earlier and slighter forms of the affection. More advanced growths, which have already become keratoid and verrucous, are more resistant; a 3 per cent. salicylic-sulphur ointment should be applied on a cloth at night, covered with oiled silk, and kept in place with adhesive plaster. When the corneous mass is softened, it may be gently removed with a bit of cotton soaked in benzine. I quite agree with Sutton, that the solid carbon dioxide is the best means at our disposal to destroy the keratosis under the crust. One thorough freezing, lasting from thirty to sixty seconds, is usually all that is required. If the growths have already become malignant, the treatment is that of cancer of the skin. Sutton prefers excision, with radiotherapy, for those not suitable for operation. I employ the curette and arsenic, and with practically uniformly good results. In a previous



FIG. 24.—Beginning malignant degeneration in a seborrheic keratosis. (Sutton's case.)

review,<sup>1</sup> I have noted and illustrated the excellent results obtained by Sherwell in cases of this kind with the acid nitrate of mercury. Individual predilection, and more especially practice in the handling of the different remedies, will determine our choice. There are many ways of treating these superficial carcinomata successfully, and they are all good, though not, in my estimation, equally so.

**Radium: Its Use and Limitations in Skin Diseases.** The main objects of this review, I take it, are to aid the general practitioner in handling the various dermatoses that he meets with, and to keep him in touch, in a general way, with what is being done by the special students in this line. Radium would seem to be outside its scope, on account of

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1911, p. 107.

its prohibitive expensiveness; it is not likely to be employed by the profession at large. Nevertheless, it is so widely known that even the laity are interested in it; and the conclusions of Simpson,<sup>1</sup> as regards its uses and limitations in dermatology, may be of value. He finds it useful in epithelioma, in lupus erythematosus, and in angioma. As regards the first of these affections, which is illustrated by "before and after" pictures of two cases, the criticism is to be made that they are early and very limited instances, in most accessible localities, of the molluscoid and rodent ulcer varieties of the disease. While they may be true epitheliomata, they are of that type of growth which is readily curable by the simple means that are in the hands of every practitioner. During the past few days I have treated two similar cases less favorably located (one on the ala nasi), by means of curettage and the arsenical paste; and I have assured my patients of a perfect result. Simpson's cases cannot compare, for instance, with those of Sherwell noted in this review<sup>2</sup> a few years ago, either as to the extent or the seriousness of the affection; yet these latter were treated with curettage and the acid nitrate of mercury only. Why advocate a very expensive and almost impossible method of treatment for cases in which we have as good or better means at hand? The same remarks apply to the cases of cancer of the skin cured with radium that have been published by Abbe, and others. It is quite easy to give a portentous name to an affection that, in the condition that most of these cases were in, is comparatively non-serious and readily remediable by a variety of methods; but every dermatologist knows that skin cancer, especially in its earlier stages, is an essentially different affection from carcinoma of the internal organs.

In the cases of lupus erythematosus, the argument is much the same. Simpson has treated twenty cases, with results "on the whole very encouraging." In selected cases, he has obtained complete involution; but relapses occur. We get better and more certain results with trichloroacetic acid and the solid carbon dioxide. I have, in fact, long since come to the conclusion that, in all but the most superficial forms of lupus erythematosus, the invaded area must be transformed into superficial scar tissue to ensure permanency of results. That is the way in which nature itself finally cures the disease; and we must simply forestall her, and effect in a few weeks what she takes years to accomplish.

In angioma, finally, the author claims that the results attained are superior to those from any other method. Of course its painlessness is an argument in its favor, especially in the case of children. The results attained in growths of all varieties of this nature with solid carbon

<sup>1</sup> Journal of the American Medical Association, August 29, 1914.

<sup>2</sup> PROGRESSIVE MEDICINE, September, 1911, p. 108.



dioxide, however, are as nearly perfect as can be imagined. Radium may be desirable, but it is not a necessity.

This is a very small field in dermatology for a costly method of treatment. I have not been sufficiently impressed by what I have seen of cures and alleged cures by radium to use it. This sceptical attitude may be due to the fact that on the skin the diagnosis of the affections treated can be made with certainty, and its effects can be watched. When it comes to affections of the internal organs, where diagnosis and decision as to improvement or cure are largely a matter of inference, I have nothing to say here. But, in dermatology, radium is hardly needed.



FIG. 25.—Trichotillomania. (Sutton's case.)

I would reiterate my conviction heretofore expressed, however, that there is nothing specific about the action of radium. Like the *x*-ray and like any number of mechanical and chemical agencies, it is an irritant, and causes a reactive inflammation in the tissues subjected to its influence. This reactive inflammation is useful therapeutically in a number of disease conditions; but it can almost always be gotten by easier, simpler, and cheaper means.

**Trichotillomania.** This is the name applied by Sutton<sup>1</sup> to the "trichamania" of Besnier, a peculiar dermatoneurosis characterized by an abnormal desire on the part of an apparently otherwise sane individual to extract his own hair forcibly. The impulse is seldom cyclic, but is as sudden as it is uncontrollable, and Raymon's designation of "tic de l'épilation" is not an inappropriate one. The scalp, the eyebrows

<sup>1</sup> Journal of the American Medical Association, December 12, 1914.

and lashes, and the beard, are the parts most frequently attacked. The writer describes two typical cases of the affection, which have recently come under his observation.

The first was that of a woman of twenty-seven years, who claimed that quite unconsciously she acquired the habit of pulling out hairs from her eyebrows whenever she was worried or excited. There was no itching or other cutaneous symptom; and she found that, though she tried to combat the tendency, this habit of unconscious epilation grew stronger in the course of time. The second case, Sutton's illustration of which I append (Fig. 25), was in a schoolboy of fourteen years, of high-strung, nervous temperament, a nail-biter, mouth breather, with a shrunk chest, retreating chin, highly arched and misshapen palate, and poor teeth. The hair on the top and the right side of the head was normal, but on the left side practically all the stiff shafts were gone—"only the short fuzzy tips of the downy new growth were to be seen." I quote this last from Sutton, for it leads me to suspect that something more than mere epilation with the fingers was present on the boy's scalp. Epilated hairs, like those cut off, regrow with full-sized pigmented shafts; in fact, they are usually stronger than those they replace. Lanugo hair means smaller and weaker papillae. The patient stated that it was impossible for him to resist the impulse to jerk out the stiffer hairs, especially when he was worried or excited.

### SYPHILIS.

**Chancre of the Finger.** The finger is probably the second commonest site of the extragenital syphilitic infection; the most frequent is of course the lips, on account of the prevalence of the osculatory habit and the delicacy and vulnerability of the tissues in that location. The digital infection is of personal interest to medical men on account of their exposure to it in the course of their work, and to the fact that, as a rule, the lesion is misinterpreted, in its early stages at all events, and treated as a pus infection; thus entailing useless suffering and a loss of time in beginning the treatment that may have irreparable consequences.

Gilmour<sup>1</sup> records and pictures an interesting case of the kind, which the patient did not consider important enough for a month after it began to have treated (Fig. 26); he then went to a hospital in New York, where an incision was made, evidently under the impression that an ordinary infection was present. Ten days later a second incision was made, and the wound was curetted; at which time the patient states that he saw exposed bone. Following this, the swelling is said to have become smaller. Four months later the photograph was taken, at which time a macular syphiloderm was present. Sixteen weeks is almost too long a time for the secondary period of incubation; and it

<sup>1</sup> Journal of the American Medical Association, February 13, 1915.

is quite possible that the trouble was an infection at first, on which the syphilitic virus was subsequently inoculated. I have described and figured a number of extragenital syphilitic infections in these pages in the past; including one of the lip,<sup>1</sup> of the nose,<sup>2</sup> of the eyelid,<sup>3</sup> of the nipples,<sup>4</sup> of the lip,<sup>5</sup> of the tongue,<sup>6</sup> of the finger,<sup>7</sup> and of the face.<sup>8</sup>

**The Present Status of the Syphilis Therapy.** It would be natural to suppose that the great advances in our knowledge of the luetic disease in recent years would be accompanied by a radical change in our methods of handling the disease; that the recognition of the treponema as the infective agent, the introduction of new tests for the presence of the

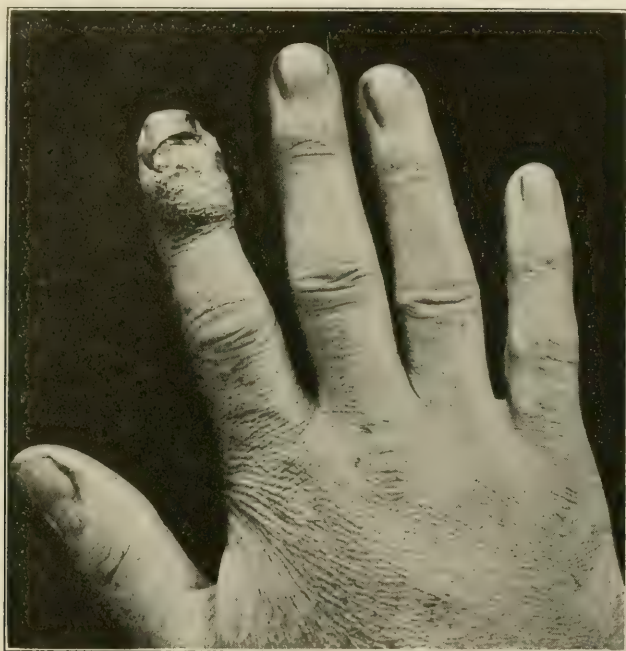


FIG. 26.—Chancre of finger. (Gilmour's case.)

disease, such as those of Wassermann and Noguchi, the successful inoculation of the malady in the lower animals and the added experimental facilities thus obtained, the elaboration of new remedies or rather of improved old ones, such as salvarsan and neosalvarsan, and the introduction of new methods of medication like the intraspinal treatment, would be followed by important changes in our attitude to

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1905, p. 134.

<sup>2</sup> Ibid., 1907, p. 129.

<sup>4</sup> Ibid., 1908, p. 142.

<sup>6</sup> Ibid., 1909, p. 152.

<sup>8</sup> Ibid., 1913, pp. 135, 136.

<sup>3</sup> Ibid., 1908, p. 137.

<sup>5</sup> Ibid., 1909, p. 151.

<sup>7</sup> Ibid., 1909, p. 152.



the infection and in our manner of combating its ravages. We have now had several years in which to study the newer aspects of the disease; and we find that we must come to the somewhat disappointing conclusion that, in essential points, we are very much in the same position that we were before the momentous discoveries that I refer to had been made. Changes there have been, of course; but none of a very radical nature; and our attitude to the infection is in its essential points much the same as it was before the great recrudescence in syphilology that has marked the last decennium.

It cannot but be useful, from time to time, to pause and take stock, as it were, of the various reported results, opinions, and experimental work done in this very extensive field; to attempt, so far as is in our power, to sift the chaff from the grain; and to lay down such general principles as the present state of our information would seem to warrant, for the mass of material presented to us each year is nothing less than enormous, and the general practitioner, more especially, cannot possibly keep track of it. The physician wants guides for conduct, not reports of experiments and records of cases; to the end that he may know what to do in a given case. Sifting of the evidence, decision as to the validity of claims made, advice as to the best method to be pursued; these must necessarily be left in the hands of those who have the time and the opportunity to examine the multitudinous array of facts. The subject is so large and important that it will be well to subdivide it; not with the idea of covering with any degree of completeness a matter that would require more than all the space allotted to me here, but to touch on some, at least, of the points in connection with it that are liable to come up in the course of everyday practice. I shall use as my text four recent papers that deal with the more general aspects of the subject.<sup>1 2 3 4</sup>

1. *Syphilis as a Disease Factor.* The prime importance of the luetic infection as the real cause of disease processes not formerly recognized as syphilitic in origin is growing, I might almost say, daily. It is a recognized fact today, for instance, that tabes and paresis, in practically every case, are its direct consequences. Evidence is accumulating to show that a large amount of cardiac and vascular disease, more especially of the aortic and arterial variety, formerly attributed to alcoholic and other excesses, to intoxications of the most varied kinds, is directly due to the luetic infection. The same virus is now believed to be the cause of many chronic affections of the kidneys, the liver, the lungs, and other internal organs, the etiology of which has been in the past shrouded in darkness. In fact, when we survey this field, we are

<sup>1</sup> Klotz, *Journal of Cutaneous Diseases*, June, 1914.

<sup>2</sup> Stimson, *Government Report*, Washington, 1915.

<sup>3</sup> Williams, *Medical Times*, January, 1915.

<sup>4</sup> Marsh, *Medical Times*, January, 1915.

impressed with the fact that syphilis vies with tuberculosis, and perhaps exceeds it, as a cause of morbidity. I shall have more to say on this subject in connection with the consideration of the blood-test as an evidence of disease in the absence of direct leptic symptoms.

2. *The Microscope in the Diagnosis of Syphilis.* The lesions of the disease itself, the morphology of the syphiloma, the original chancre, the specific cell accumulations of syphilis of the skin, mucosæ, and internal organs, are not sufficiently characteristic for us to obtain much help from that source. In the diagnosis of the initial lesion itself, however, as well as in that of early mucosal lesions, in both of which the treponema is abundant and readily demonstrable, the microscope is valuable, and, in exceptional cases, indispensable. None of the staining methods, however, for the recognition of the dead spirochetæ are entirely reliable. In mouth lesions more especially there are spirillæ present under normal circumstances that resemble the syphilitic organism too closely to allow the examination to be decisive. The dark stage, however, is a simple piece of mechanism, is not expensive, can be used with any microscope, and does not require any very great technical skill to use. Scrapings taken from the surface of a lesion suspected to be a chancre, a mucous patch, or a secondary lesion, will, if they are really such, show the living and rapidly-moving organism in such quantity as to preclude the possibility of error. It is a diagnostic procedure fitted for everyday use. The skilled syphilographer, of course, will have less occasion to use it than will those who see but little of these diseases; but even for him it is useful to determine the diagnosis in the occasional doubtful cases, and to clinch it in the apparently easy ones. It must be carefully borne in mind, however, that it is in the early lesions only that the procedure is of value. In the later syphilitic efflorescences, the spirochetæ are too few in number and too difficult to demonstrate for it to be of use.

3. *When Shall we Begin the Treatment.* The old rule, and the one that I have taught in various publications and in these pages, was to wait until the advent of undoubted secondary symptoms, the characteristic local adenopathy or a general eruption, rendered the diagnosis certain. That rule still holds good; syphilitic treatment should not be instituted until we are absolutely sure that the disease is present. Before the discovery of the treponema, however, and the elaboration of a ready means of detecting its presence, it was necessary to wait for a varying period, sometimes as long as several weeks, until the confirmatory symptoms appeared. One of the difficulties we encountered in the management of these cases was this necessity; we did not feel justified in putting the patient on a treatment that might postpone, or entirely prevent, the appearance of those secondary symptoms on which the positive diagnosis would rest; our patient, and we ourselves, might be left permanently in doubt as to the existence of the infection; it

was a confession of ignorance on our part, and one that we found great difficulty in explaining to our patients; and it was hard to get patients to submit to the delay. Nor can there be any doubt that this delay worked harm to the bearers of the lesions; it entirely prevented all attempts at an abortive, or early radical, treatment of the disease; at the very time when the infection was still localized, when vigorous treatment offered the best chances of success, we were compelled to procrastinate. Yet we were justified by the state of our knowledge at the time; since it was as bad a mistake to diagnose a syphilis that was not present, and to subject a patient to the far-reaching effects of a supposed leucic infection, which could not be disproved, as to postpone the treatment for a time. All that has now been changed; the diagnosis of an early syphilitic lesion can be made at once. And treatment should be commenced at once. If the lesion is a chancre, the spirochete will be readily found in scrapings from its surface; and if it is a later lesion, the blood test will supply the needed confirmatory evidence.

4. *What Treatment shall we Employ?* Leaving out of account excision of the sclerosis, a measure that I have formerly and still do advocate, but which is practicable only in a very small minority of the cases, the local treatment of a specific lesion, be it of the early or the late type, is a simple matter. Cleanliness, a mild bichloride lotion, or some form of mercurial ointment or powder is all that is required. Regarding the constitutional treatment, however, there is more to be said.

Even before salvarsan was commercially obtainable in this country, I was able, through the courtesy of Drs. Flexner and Noguchi, to experiment with this well-advertised proprietary on a rather large scale and under the best conditions for unbiassed judgment. My conclusions, which were published at the time,<sup>1</sup> were to the effect that the new drug, while undoubtedly of value, did not cure syphilis any more or even as much, as mercury and iodine; and that to rely upon it alone, even in repeated doses, was a delusion and a snare. I was roundly berated, mostly from non-syphilographic direction, for this attitude of conservative opposition to the ignorant enthusiasm that then prevailed. Yet every word of my conclusions has stood the test of time, and they are accepted by all authorities today. Inevitably, of course, I was classed as an absolute opponent to the new treatment; whereas I was and have been since then only an opponent of its unthinking and indiscriminate use. I employ salvarsan, and I recommend it in its proper place.

The consensus of the best opinion on the treatment of syphilis today is to the effect that all three drugs, arsenic, mercury, and iodine, have their place in it. Salvarsan is to be used with judgment in all stages; but it is especially useful in the early ones, and when local infec-

<sup>1</sup> New York Medical Record, December 31, 1910.



tive lesions are to be removed as quickly as possible. Mercury remains our mainstay for the cure of the disease; it is to be given in all its stages, but most vigorously in the earlier ones. Iodine is the remedy for late syphilis, though not to the exclusion of the other two drugs. The treatment that I recommend, then, is the following:

A course of from four to eight intravenous injections of neosalvarsan as soon as the diagnosis is made, given at intervals of from five to eight days. At the same time, between the salvarsan injections, and continued after they are done, twelve to twenty intramuscular injections of an insoluble mercurial, given at intervals of about a week. I use neosalvarsan in the early stages and in untreated cases because it is easier to use, causes less local trouble, and seems at this stage to be as effective as the older form of the drug. At the end of this course there should be a rest of one to three months, and a blood examination may be made. I would emphasize the word "may"; for it makes no difference what the report is; experience shows that the patient requires treatment in courses for a long period of time, no matter what the blood reaction at the moment may be. Then the patient is given a second course similar to the first, though its dosage and extent will naturally vary in accordance with the appearance of symptoms and the character of the blood reaction. During the second year of the disease I usually substitute the old salvarsan for the neosalvarsan; and I give at least two courses of combined arsenical and mercurial medication in that time. After that comes the time for iodine; and it is the almost complete neglect of this important remedial agent that forms a main and justifiable criticism of the salvarsan obsession which has afflicted us for five years past. I am entirely convinced that for the later and more deep-seated of constitutional syphilis iodine is of more importance than either of the other drugs.

5. *How Long Should Treatment be Continued.* The advent of the new method of determining the persistence of the luetic infection has, of course, modified our views in this particular, but by no means to the extent that is generally supposed. The old rule was to give certain regular courses of antiluetic treatment extending over a period of three years or five years, no matter what symptoms appeared, and no matter if none appeared during the latter part of the period selected. To a certain extent, this was a purely arbitrary selection of time; but it had its justification in the natural history of the disease and in the general consensus of opinion as to its utility on the part of those most experienced in the management of the disease. Most of the then recognized phenomena of syphilis appear during the first three or four years of the disease; and its dreaded sequellæ were less frequently seen in cases so treated than in those in which it had not been employed. We had no means at our command, however, of testing the patient as to the persistence of the infection; and undoubtedly, in some cases, treatment

was kept up after the necessity for it had passed, while in others it was stopped while the necessity for it still existed. The elaboration of the Wassermann test has put at our disposal a symptom that we can elicit at will; and this has necessarily modified our views as to the time of treatment required. This is true, however, only to a limited extent, the reasons for which will be explained in the next section. The serum test should be made from time to time during the treatment of a case, and it may be permitted to guide us to some extent as regards the intensity of the treatment and the length of time for which it should be continued.

But the best opinion today is to the effect that, quite irrespective of the blood test, a certain amount and length of treatment is required in every case; and that the best results are attained by a course of treatment that does not differ essentially from that recommended in pre-Wassermann days. Three years of regular treatment in courses should be given, even if the blood is permanently negative. As a matter of fact the test has greatly extended, instead of having diminished, the time of treatment; for it has enabled us to recognize the persistence of the infection when there are no other symptoms to show its presence. On the one hand, a permanently negative Wassermann would justify us in increasing the interval between the courses, lessening the number of treatments, and diminishing the drug dosage employed; and, on the other, a persistently-positive Wassermann in spite of treatment is the indication for its prolongation beyond the time limit above set down, and for an increase in its intensity.

6. *Limitations of the Blood Test.* At this present writing the blood test is still in its developmental stage; its methods are not yet standardized; much depends, as yet, on the personal equation of the investigator; and we cannot as yet with confidence compare results secured by different examiners. The test is a delicate one, and requires laboratory facilities and much practice for its proper making. I am entirely opposed to the custom that has grown up in some of our larger cities of having it made by druggists and other non-medical persons; the chances of error are too great. The best advice that I can give is to have the test made by a laboratory worker who devotes exclusive, or at all events, special attention to it; and to have the same person make all the successive tests on any one case. In this way the chances of error from variation in the personal equation and differing methods is most nearly eliminated. To draw conclusions from a series of tests made in different parts of the country, in one place by a druggist, in another by a board of health, and in a third by some practitioner who perhaps makes half a dozen tests in a year, is decidedly unreliable, and may lead us far astray.

Furthermore, it must be clearly understood that the blood test, even when properly made by a competent investigator, is merely evidence

of the state of that given specimen at that time; many factors, and more especially too recent mercurial or arsenical treatment may influence it. Hence are to be explained the various contradictory and confusing results that are obtained from it occasionally under the best conditions. At different times, occasionally not widely separated, it may be negative, doubtful, mildly positive, or four plus, as it is called, in the same case and from the same worker. It is by no means the infallible index, both of the existence and the grade of the luetic infection, that is popularly supposed to be the case. Nevertheless, there are certain conclusions that the state of our knowledge of the subject enables us to draw.

A positive Wassermann, and especially a repeatedly positive one, made by a reliable investigator, is proof of the existence of the luetic infection; and some weight may be given, under these circumstances, to its grade as indicated by the plus signs in common use to denote the intensity of the reaction. A positive Wassermann of diminishing or increasing intensity, under the same circumstances, may be taken as presumptive evidence of the waxing or waning intensity of the infection, though it should not much influence the treatment that we employ. A negative Wassermann found once means little; it may be merely a temporary phenomenon. Found repeatedly at longer intervals of time it becomes with each repetition stronger presumptive evidence of cure; and, as will be seen in the next section, forms a very important part of the evidence upon which we may be allowed to discharge our patient.

7. *The Meaning of the Blood Test.* It might seem unnecessary to refer to this aspect of the subject when so much has been written and said about it in recent times; but my experience is to the effect that misconception about it is common. It is constantly forgotten that the test is not a primary, but a secondary and subsidiary means of diagnosis. This latter must be made on other evidence in the great majority of cases; the Wassermann examination is merely a means of confirming and strengthening the diagnosis. For a positive result only informs us that a syphilitic infection is present; the trouble that the patient consults us for may, or may not, be due to it. Since an individual who has once had a syphilitic infection may, and usually does, have an occasionally or permanently positive blood for many years, or for life, it is obvious that the establishment of this fact merely informs us that he has had, at some time, a luetic infection. Obviously, this may have nothing at all to do with his present affection. Conversely, a negative Wassermann, and especially a single negative reaction, is no positive proof that he has never had syphilis, or even that the lesion under consideration is not luetic. The reaction varies in intensity, or disappears temporarily, under various circumstances; and at least repeated evidence of its absence is required to be positive of the fact.

Under these conditions it is manifestly improper either to make a diagnosis of syphilis as the cause of an affection, or to dismiss its possi-



bility on the evidence of the blood reaction alone. This does not mean, however, that it has little value; it merely means that it is not right to rely upon it alone. In a doubtful case, or one in which the symptoms are indeterminate, it is a most important factor in determining opinion. And in a case that is not doubtful, in one in which the symptoms point definitely to or away from syphilis, the Wassermann is of great value in determining our opinion. But when the symptoms point one way and the blood test the other, the weight of evidence is with the symptoms. The fact that a patient has once had syphilis in no way precludes the possibility of his suffering from other, entirely non-luetic affections; and that he has once had syphilis is the only definite fact that a positive blood examination shows.

8. *When can we Discharge a Syphilitic as Cured.* This is perhaps the most important of the points that we are concerned with in this consideration; and, unfortunately, it is not one that can be answered categorically. The best evidence of cure, of course, is reinfection; this is manifestly useless to us in the present consideration. My old rule used to be: When a patient has had full courses of treatment for the requisite number of years, and has remained for one year without symptoms and without treatment, he could be regarded as cured and permitted to marry. I was fully aware, of course, of the shortcomings and fallacies inherent in such a rule; I could never be sure that such a patient would not, at some future time, show evidences of the persistence of the luetic infection. As a matter of fact, a certain number of these patients did show such evidences, sometimes in the unfortunate form of spinal or cerebral disease. But the great majority did not, and this justified the rule. They were certainly, at the end of the period, non-infective, and in no danger of transmitting the disease to their wives, and they procreated healthy children. We had not the means of eliciting a symptom to show the persistence of the infection that is now at our disposal; and, in the presence of apparent permanent good health, it seemed useless to prolong treatment and to withhold consent to marriage. After all, it was human beings and not the disease that we were primarily concerned with; and since the effects of a mistaken idea as to cure concerned only the individual himself, so far as we could see, it seemed improper to take the opposite attitude for fear of sequellæ that, in the great majority of cases, did not occur.

To a certain extent, this attitude has necessarily been modified by the later discoveries in the syphilitic field, both in the way of improvement and the reverse. A persistently negative Wassermann, a negative result obtained several times at intervals in a patient who has had proper treatment, is as good an evidence of cure of the disease as we can get. It is not absolute; I have known exceptions to it; but it is near enough to certainty for us to be guided by it. We can discharge such a patient as cured, and permit him to do as he likes. Unfortunately, however,

a permanently negative Wassermann is often unattainable, even under the most careful and prolonged treatment. The question of what to do with these patients is an important one, and is by no means as yet settled. In so far as their marriage is concerned, we stand about where we did before the test was discovered. The only difference is that now we know that they are not cured, so far as they personally are concerned; formerly we only knew that it was possible that they might be in that position. But they are non-contagious, and in all probability will have healthy children. They cannot be absolutely discharged from treatment; but they can be permitted to marry, and it is my practice to give them that permission.

9. *The Meaning of a Persistently Positive Blood Test.* Medical opinion is at the present time undergoing a very important change on this question. The ever increasing recognition of the importance of syphilis as the etiological factor in diseases of the nervous system, of the blood-vessels, and of the internal organs formerly ascribed to other or to unknown causes, is leading many syphilographers to the belief that a positive Wassermann, even in the entire absence of other symptoms, means that some syphilitic, and therefore destructive, change is going on somewhere in the body. I now send these cases to the internist, and have as thorough an examination as possible made of all the organs and all the excretions. I must confess that in most cases nothing definite has been found; but, in some, the first beginnings of changes in the nerve structures or in the bloodvessels, or in the internal organs, has been detected. I am becoming more and more convinced that some process of the kind must be going on in every case where the Wassermann remains positive, though we may not be able to detect it with the means of diagnosis at our disposal. This leads me to the next and last section of this general review of the subject.

10. *What shall we do with Patients Showing a Permanently Positive Blood, and no Other Symptoms?* Perhaps no more difficult task confronts the practitioner anywhere than the one presented when he faces a patient who has had proper treatment, and is apparently well, but whose blood remains positive. The difficulty of making him comprehend the position that we are obliged to assume; the necessity of explaining to him that he is cured, in one sense, and yet is not cured, in another; the obligation of permitting him on one hand to assume all the duties and rights of a well man and yet impressing on him the advisability of further treatment; all these require a complexity of attitude that puts our diplomacy to the test. Yet, from our point of view, the attitude to be assumed is a plain one. From the sociological standpoint the patient is cured and can be discharged; from the personal one he is still sick, and requires further treatment. And it is quite impossible for us to say in any given case how long this latter requirement may last. It may well be for the rest of the patient's life.

If examination has revealed the presence of lesions of the deeper tissues above adverted to, these conditions must be treated *secundum artem*; this is a matter concerning internal medicine, and cannot, of course, be more than adverted to here. Insofar as the use of salvarsanized blood serum by intraspinous injections is concerned, it does not seem to me to be hopeful enough to be recommended; and it is entirely beyond the reach of the average practitioner. Every year at least once, and for an indefinite period, the patient should receive a course of treatment; salvarsan and mercury should be used in moderation, iodine in full doses being our main reliance. The blood reaction should be kept track of, one or two tests being made yearly. If, at any time it should be negative, repeated tests must be made to determine whether the change is a permanent one or not. If it is permanent, the patient can be regarded as cured; if it is not, the only advice that we can give is to continue the yearly courses of treatment as long as the sufferer's patience endures.



# OBSTETRICS.

By EDWARD P. DAVIS, M.D.

## PREGNANCY.

**The Abderhalden Test for Pregnancy.** The Abderhalden test for pregnancy has suggested much of interest in the use of this test in the diagnosis of malignant disease.

In the *Journal of the American Medical Association*, February 21, 1914, Ball has studied 7 cases of malignant disease in which the clinical diagnosis was plain, 28 cases in which the conditions were suggestive and suspicious of malignancy, and 16 in which the test was used as a means of diagnosing pregnancy.

He alludes to Vaughn's doctrine, that in cancer the cell is one that has lost its power of forcing its reproductive ferment back into an inactive stage. The reproductive ferment in the cancer cell is uppermost, and cannot be influenced by outside stimuli. From this conception, Ball would associate the productive ferments of Abderhalden with the antiferments of Vaughn, as practically the same. Positive reactions would then be obtained in two classes of cases: (1) persons clinically normal, who at some previous time had been invaded by cancer which had been entirely eradicated; (2) all cases possessing even the slightest malignant tumor formation. These latter may again be divided into those suspiciously malignant, and those clinically malignant.

In making these tests, the cancer-protein was obtained from an abdominal lymphosarcoma, or from a cancer of the breast.

Of the 7 cases clinically malignant, 4 were of the breast, 2 of the uterus, and 1 of the stomach, giving positive reactions. Of the 28 suspiciously malignant, the gastro-intestinal and digestive organs, the uterus, the bladder, the breast, the thyroid, the testicle, and a congenital nevus, were all the site of suspected disease.

In these 28 cases, a positive reaction was obtained in 20, and a negative in 8.

In 14 cases in which pregnancy was suspected, 10 were evidently pregnant, and, of these, 4 gave a positive and 6 a negative reaction; 4 were suspicious of pregnancy and gave a negative reaction.

For purposes of comparison, a normal male person was tested, giving a negative reaction, and a thyroid case, giving also a negative reaction.

It is interesting to note that of the 20 suspicious cases giving a positive

reaction that the *x*-ray verified the diagnosis in 3, postoperative microscopic section in 10, and a subsequent history in 7.

In a second series, there were 11 patients tested by pregnant serums used as controls. These patients had all the clinical signs of pregnancy; 2 had abortions at three months; 1 was between the third and fourth month; and 8 were at full term. The test confirmed the clinical history. There were also 7 cases of early pregnancy in which the circumstances pointed to pregnancy, but positive evidence was lacking, in which six positive reactions, and one negative, were obtained. There were 31 patients who were not known to be pregnant, most of them having malignant disease, and some male persons in whom the tests and the use of pregnant serum as control, gave a positive reaction in 9, negative in 22.

The latter series calls attention to the interesting fact, confirmed by others, that some male persons with tumors of the genital tract possess a ferment which digests placental tissue.

Ball calls attention to two sources of vitiation in the test, one by bacterial contamination of the dialyzing thimble, the other the danger of getting a drop or two of blood serum, or a little of the protein material, on the outside wall of the thimble. To obviate this, he has devised an apparatus which he illustrates in his paper and which he has found satisfactory.

McLester,<sup>1</sup> of the University of Alabama, reviews the literature of this subject, and calls attention to the necessity of following strictly the technique described by Abderhalden. McLester has found that absolute asepsis in every step is demanded. The dialyzing materials must be absolutely perfect, and the organ albumins perfectly prepared. They are then snow-white and do not contain even the minutest trace of blood or extract substance. Before using the test each preparation must be tested by dialysis for any remaining traces of blood. The utensils must be in perfect condition and aseptic, the water used freshly distilled and sterile. The uneven evaporation of the different dialysates must be prevented. To do the work properly, a special incubator and a separate laboratory are demanded.

Jellinghaus and Losee<sup>2</sup> describe minutely the technique which they have employed, and illustrate a simple apparatus for collecting blood from the median basilic vein. In interpreting the results of the tests, they found that placenta and serum giving a negative ninhydrin reaction, when its control with inactivated serum and placenta also gives a negative ninhydrin reaction, is non-pregnant. When a positive ninhydrin reaction is obtained with a positive reaction of the same intensity, it is still considered non-pregnant. The diagnosis of pregnancy is established when the placenta and serum give a positive

<sup>1</sup> American Journal of the Medical Sciences, July, 1914.

<sup>2</sup> American Journal of Obstetrics, April, 1914.

ninhydrin reaction and when its control with inactivated serum and placenta gives a negative ninhydrin reaction. A lighter shade in the positive ninhydrin reaction than that of the placenta and serum still points to pregnancy.

Schwarz<sup>1</sup> gives a positive result in 41 pregnant cases, and a negative in 30 known not to be pregnant. In 12 doubtful cases, the serum tested led to a correct diagnosis. Among these there were several cases of ectopic pregnancy.

**The Diagnosis of Pregnancy by the Antitrypsin Method.** In Franz's Clinic, in Berlin, Adachi<sup>2</sup> has studied the serum diagnosis of pregnancy by using a trypsin solution, 1 decgm. of dried trypsin in a vessel holding 100 c.c., to which is added 50 c.c. of salt solution, 1 c.c. of normal  $\frac{1}{10}$  per cent. alkali, with physiological salt solution to make up the 100 c.c.

A second solution was casein in dilute hydrochloric acid; and a third an alcohol and water mixture containing 5 c.c. of acetic acid.

In 17 cases of normal puerperal patients, the retroplacental blood was tested with the trypsin solution, and in 5 cases the blood from the umbilical cord of the newborn. In 30 patients who had the clinical signs of pregnancy, the antitrypsin method gave a positive reaction in 29. It was found that a smaller quantity of the solution gave a test in the first half of pregnancy, while a larger quantity was necessary for patients examined during the second half of pregnancy.

**The Proteolytic Ferments of Leukocytes as a Test for Pregnancy.** Lohmeyer<sup>3</sup> has used the proteolytic ferments of leukocytes as a test for pregnancy. He describes his technique in detail, and finds that pregnancy increases these ferments. This increase lasts during labor, and for two weeks afterward, while the leukocyte ferments are increased in septic cases during the time when the temperature is decidedly raised.

**Anaphylaxis in Pregnancy.** Bolaffio,<sup>4</sup> in Pestalozza's Clinic, in Rome, has studied the condition of anaphylaxis with regard to pregnancy. His results were negative as regards pregnant guinea-pigs tested by fetal and placental tissue and fetal serum. A similar result was found when placental substances, fetal serum, and fetal organs, were employed. There was no evidence to show that anaphylaxis accounted for the passage of albuminous bodies in the blood serum from the adult to the fetus; and this was equally true when amniotic liquid was tested.

**The Relation Between the Serum Test and the Albumin Found in the Urine in the Albuminuria of Pregnancy.** Hinselmann,<sup>5</sup> of Bonn, in 12

<sup>1</sup> American Journal of Obstetrics, January, 1914.

<sup>2</sup> Zeitschrift f. Geburtshilfe und Gynäkologie, 1914, Band lxxvi, Heft 2.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Zentralblatt f. Gynäkologie, 1914, No. 7.



cases could find no relation whatever between the albumin in the albuminuria of pregnancy and the serum employed in the serum test.

To illustrate the many applications of this test in research, we may mention Schottlander's describing his researches in testing the internal secretion of the genital tract with the serum test. While Primsar,<sup>1</sup> in the clinic in Leibach, examined 30 pregnant sera, 27 reacting positively to placental tissue, 3 giving a positive reaction with placental substance, but negative with other albuminoids.

Stresemann<sup>2</sup> reports 105 cases in which a comparative study was made of pregnancy and carcinoma.

Hüssy,<sup>3</sup> in the clinic in Basel, simplified Abderhalden's technique, and in 23 cases obtained a positive diagnosis.

Blackstein<sup>4</sup> examined 91 cases—60 carcinomas, and 31 of other diseased processes, by the Abderhalden test. In the carcinomas, 49 gave a positive reaction, 9 a negative, and in 2 the serum alone was positive.

It is interesting to observe that those giving a negative reaction had cancer which was well advanced, and that probably the patients were too depleted to form ferments in the blood.

In a patient treated with radium, the reaction disappeared. In 10 operated upon, and remaining free from return, a negative result was given. Blackstein was led to believe that when the test is positive, and pregnancy can be excluded, it points very strongly toward carcinoma. This may be of considerable value in the early diagnosis of cancer.

Puppel,<sup>5</sup> of Mainz, from 27 specimens of blood obtained by experiment 32 reactions. A positive diagnosis of pregnancy was given in 16, and attention is called in the others to the uncertainty of the method in some complicated conditions in the pelvic organs.

In the report of Bar's Clinic<sup>6</sup> in Paris, he does not find the serum diagnosis a method of positive value. In 170 cases of all sorts it was found that in those cases which were clinically proven not to be pregnant, in only two-thirds was the reaction negative. A positive error occurred in one-third of the cases not pregnant. In some of these the patients had fibroma, in others cancer, and in others there was some focus of suppuration within the body.

Fetzer,<sup>7</sup> in the Königsberg Clinic, has had considerable experience, and believes the method is valuable in assisting to make a diagnosis. Especially is this true in the early months of pregnancy. Ectopic pregnancy also furnishes a useful field for the method. On the whole, his experience, often confirmed by operation, has been distinctly favorable.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 12.

<sup>3</sup> Ibid., No. 25.

<sup>5</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 6.

<sup>6</sup> Ibid.

<sup>2</sup> Ibid., No. 24.

<sup>4</sup> Ibid., No. 30.

<sup>7</sup> Ibid., Band xl, Heft 5.

A summary of the experiences of German and Austrian observers is given in a recent number of the *Medizinische Klinik* of Vienna, March 15, 1914.

Among those whose reports are given are Zweifel, at Leipsic, very favorable experiences in 90 cases; Veit, at Halle, a favorable experience in 60 cases, and a misleading result in but 5 per cent.; in 60 cases of cancer the reaction was also positive in all but 2.

In Bumm's Clinic, in Berlin, 120 cases had been recently studied—69 pregnancies with positive reaction, 20 non-pregnant with negative reaction; in 3 cases a doubtful result; in 28, a misleading result.

It was considered non-specific, and hence unreliable in the differential diagnosis between pregnancies and tumors. In 48 per cent. of cases having tumors, the reaction to placental tissue was positive, although pregnancy could be excluded.

Opitz, at Giessen, had found the method by dialysis reliable. Stoeckel, at Kiel, believes that the slightest error in the technique vitiates the test.

At Basel, Herff found it reliable and efficient in 100 cases, the only failure being in one in which the dialyzer was defective. At Würzburg, Hofmeier found that, with reliable technique, the results could be accepted especially in ectopic pregnancy. Kroemer, of Greifswald, in 100 cases, had one erroneous result in a case of myoma of the uterus, and one negative reaction in an old case of placental polyp. Küstner, of Breslau, would rely upon it only when done by an expert. Winter, at Königsberg, believes that it requires an expert to properly perform it, and that in such hands it is of great value in making the diagnosis in doubtful cases. Zangemeister and Sellheim had found the test, when carefully performed, satisfactory; while Menge had a misleading reaction in 7 per cent. of all cases.

**The Serum Diagnosis of Pregnancy and Cancer.** The serum diagnosis of pregnancy and cancer is the subject of a particular study by Leitch,<sup>1</sup> pathologist to the Cancer Hospital in London.

The writer recognized the field of study opened by Abderhalden's and Ehrlich's researches. He does not believe that the technique cannot be carried out by the average laboratory worker with ordinary care. He, personally, rejected the results which he obtained during the first half of his researches, to avoid the criticism of being unfamiliar with the technique. He found, however, that during this first period his results were more favorable to Abderhalden's claims than afterward. He accounts for this by his enthusiasm over a new method, and his willingness to accept without criticism good results, overlooking those very doubtful or adverse.

He made 36 tests with the serum of pregnant patients. In the great

<sup>1</sup> British Medical Journal, July 25, 1914, and August 15, 1914.

majority of these cases the test was positive. In 11 cases of gynecological conditions without pregnancy, there were repeated examples of the unreliability of the test. In a soft fibromyoma of the uterus the test was twice made with a positive result, operation performed, and no evidence of pregnancy found. In a case of chorio-epithelioma, however, the test was positive, although there was no evidence, clinically, of the real condition, which was finally made plain by operation. Control tests were then made with 22 cancer patients—10 female and 12 male. The result showed that many malignant cases will give a reaction to placental substance, and the writer has never encountered a placenta which did not give a reaction to cancer serum.

Thirty-one conditions in other cases, including appendicitis, syphilis, tuberculosis, non-malignant tumors, hernia, and cholecystitis, of whom 20 were females and 11 males, were tested with varying results. There were five distinctly erroneous reactions out of the 31.

The whole series of cases numbers 100, in which there were 17 entirely erroneous findings as the result of the test. This is considered a large percentage in estimating the accuracy of the method.

In his second paper, Leitch writes of the protective ferments in cancer, and criticises the Abderhalden theory. In his experiments he uses substances derived from malignant growths as substrates. This substance was tested with placental extract. Positive reactions in 51 cancer cases were obtained in 55 per cent.; in 49 non-cancerous cases, positive results were obtained in but 37 per cent., which would indicate that for this purpose the method has but little diagnostic value. Practical experience shows that few of the dialyzing tubes are perfect, and that sources of error may readily arise.

McKenzie Wallis<sup>1</sup> gives a good review of the literature of the subject to the time of writing. His bibliography includes Abderhalden's paper and is largely derived from German writers. He finds that the serum of pregnant women contains a specific ferment of digestive placental tissue, recognizable from the eighth week of pregnancy until ten days after delivery, by both the optical and dialyzing test. Both tests should be used with the greatest accuracy. Good results are obtained in the early diagnosis of pregnancy, the differential diagnosis of fibromyoma, of ectopic gestation, chorio-epithelioma, and retained placenta.

There is no reason for believing that the serum of pregnant women will digest other than placental tissue.

**Antiplacental Ferments in the Serum of Pregnant Women.** Acalles<sup>2</sup> has extensively studied the antiplacental proteolytic ferments, and finds that the serum of the pregnant woman, in the presence of placental tissue, reacts to the albuminoid of the placental substance. He believes that the reaction described by Abderhalden is produced by proteolytic

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, February 19, 1914.

<sup>2</sup> Archiv. Mens. l'Obstétrique, March, 1914.



antiplacental substances. He finds that this obtains from the first months of pregnancy until three weeks after delivery. The intensity of the reaction does not seem influenced by the age of the patient, nor the nature of the placenta, provided it be practically of normal structure. Very frequently blood serum taken from the umbilical cord fails to produce a reaction to placental tissue.

When a positive result is obtained, it is less decided than with the mother's serum. In a case of fetal death or retention of the placenta, the reaction may become negative. In ectopic gestation the reaction is positive so long as the ovum is living, becoming negative when it dies.

When one attempts to apply these observations in the study of albuminuria or eclampsia, the problem is difficult. In cases of pernicious nausea of pregnancy there is a distinct diminution in the character of the reaction. So far as the percentage of positive results obtained is concerned in non-pregnant patients, but 30 per cent. gave a positive reaction; 70 per cent. of non-pregnant patients gave a negative reaction. When the positive reaction is present, it is much less intense than in pregnant individuals. Positive reactions of considerable intensity were also obtained in women suffering from abundant hemorrhage, or having a retained collection of blood, or of pus, or in patients the victims of cancer.

Failure to obtain a positive result may be attributed to some fault in the technique or in the apparatus, especially in the dialyzers employed, and also from the fact that the serum used may contain traces of hemoglobin so faint as to be readily overlooked. Occasionally the test does not result normally because albuminoid bodies other than placental may be present. These substances are of a complex nature, and not fully determined.

**The Specificity of Placental Proteins in Skin Reactions of the Human Body.** An interesting observation entitled "The Specificity of Placental Proteins in Skin Reactions of the Human Body" is reported by Falls and Bartlett,<sup>1</sup> from the departments of experimental medicine and of obstetrics in the University of Illinois.

The writers review some experiments by the Abderhalden test, and then state that while working with these it occurred to them that if a ferment were circulating in the blood of pregnant women which was specific for placental proteins, by introducing some of this protein under the skin, a reaction might be obtained which would differ in nature or intensity from the reaction observed in non-pregnant women.

In studying cases, the local reaction, as manifested by redness and tenderness at the site of injection, and by involvement of the regional lymphatics, the general reaction in headache, backache, nausea, vomiting, uterine contractions in pregnant women, and other disturbances

<sup>1</sup> American Journal of Obstetrics, December, 1914.

and also the special symptoms of anaphylactic reaction and respiratory disturbance, changes in blood-pressure and in the urine, were given special attention.

Pure proteins, or protein fractions of the placenta, or the whole placenta, were used for injection.

The writer has laid special stress upon local reaction. The pregnant patients were young, most of them in the last two months of gestation. No cases of toxemia of pregnancy were used. In control experiments, care was taken to select healthy women, and a few males were subjected to experiment who were also healthy.

The results were not uniform. Positive reactions were obtained in pregnant and in non-pregnant women. Nearly all cases reacted to some extent, but the result was less clearly defined in some of the pregnant patients than in those who were not pregnant. There was very little general reaction, nor could symptoms of anaphylactic reaction be detected.

The details of the experiments are given, and the conclusions are reached that proteins prepared as described in the paper, or whole placenta by the intra- or subcutaneous method, in most cases cause a local reaction in pregnant and non-pregnant individuals. The difference is not sufficient to be of value in the diagnosis of pregnancy. This is contrary to the theory that the pregnant woman is sensitized to placental proteins, and this is further borne out by the lack of general anaphylactic reaction.

**Fibroma Molluscum Gravidarum.** Sutton<sup>1</sup> reports the case of a woman, aged thirty-eight years, a member of a family whose cutaneous history was negative. The patient was a brunette, and above the average in intelligence. She had two children, the younger fourteen months; early in her first pregnancy about twenty small brown pigmented and pedunculated tumors suddenly appeared on her chest and neck. Only the mammary, supramammary, and anterior cervical regions were involved, and the growths caused no subjective symptoms. After the birth of the child, the growths gradually decreased in size.

In the second pregnancy a similar condition occurred, most of the small tumors disappearing after the birth of the child, but a considerable number remained.

A thorough examination was negative, and, on examining the skin, the characteristic growth of fibroma molluscum was present. One of the small growths was removed under cocaine and examined microscopically. The corneal layer was unchanged, the granular well preserved, and the rete was decreased in thickness, deeply pigmented, and with its cells stained deeply and unevenly. The papillæ were flattened and the vessels much diminished in size. The new growth occupied the

<sup>1</sup> American Journal of the Medical Sciences, March, 1914.

centre of the tumor and consisted of newly formed connective tissue, with nerves and capillaries.

The lesions in these cases were histologically identical with the neurofibroma of von Recklinghausen.

**The Duration and the Diagnosis of Pregnancy.** Peters<sup>1</sup> believes that ovulation in most cases follows eighteen or nineteen days after the appearance of the last period, *i. e.*, nine or ten days before the expected period. The corpus luteum affects powerfully the circulation in the uterus and its lining membrane. In 2.8 per cent. of his cases, pregnancy was prolonged, in some to 340 days.

This has an interesting relation to claims sometimes made of birth and descent to obtain property.

**THE DIAGNOSIS OF TWIN PREGNANCY.** Halban<sup>2</sup> describes the case of a patient, aged thirty-one years, and pregnant for the first time. During the first weeks of pregnancy there was nausea, and, on one occasion, unconsciousness. Considerable weight was lost. The uterus increased very rapidly in size, and a diagnosis of acute polyhydramnios was made. Twin pregnancy was suspected, but, as pregnancy proceeded, the hydramnios disappeared, and was followed by the occurrence of uterine contractions, greatly to the annoyance of the patient. These pains became of considerable force on two occasions, toward the last of pregnancy, lasting from two to three minutes. This, however, did not prove to be labor, which occurred spontaneously at the normal period, the child being 47 cm. long, a male, and weighing 2650 grammes. The placenta was spontaneously delivered and the pregnancy was found to be twin, with two sacs, one containing a vigorous child, the first born; the second having a fetus papyraceus. An examination of the appendages showed twin pregnancy with a common chorion and separate amnions.

As a symptom of some importance in diagnosing twin pregnancy, the writer describes, three or four fingers below the fundus, a groove or depression extending transversely from the anterior surface of the uterus—which the author had never seen before.

When one recalls the sudden polyhydramnios and its symptoms, it is evident that at this time one fetus died, and that the amniotic liquid was partly reabsorbed. The examination of the specimen failed to show the cause for the polyhydramnios.

The report caused a very minute examination of the placenta to be made. Aside from microscopic changes in the vessels and blood channels of the placenta, no lesion could be found to account for the polyhydramnios.

In another case of twin pregnancy the twins had a common placenta; one twin was born living and vigorous, the other died, and was macer-

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 9.

<sup>2</sup> Ibid.



ated. Great changes in the placental area belonging to the dead twin could be plainly seen. These too, on examination, proved to be microscopic changes in the walls of vessels and sinuses.

THE DIAGNOSIS OF TWIN PREGNANCY BY THE X-RAYS. Kreiss<sup>1</sup> calls attention to the difficulties in making a positive diagnosis of twins by the methods of ordinary palpation and auscultation. His plates showed distinctly the bony skeleton of the fetus and indicated plainly the position and presentation.

In discussion, Vogt had never seen injury done to pregnant patients by the x-rays. In Leopold's *Röntgen Ray Atlas*, Lichtenstein had satisfactory pictures of ectopic gestation taken with the Röntgen rays. So soon as the skeleton was developed at all, a plate could be obtained.

The interesting question arises as to whether by this method it can positively be ascertained if the fetus could be intra- or extra-uterine; this is not always possible.

Zurbelle, to make this differential diagnosis, introduced a sound into the uterus, and then by taking a picture could definitely locate the fetal skeleton.

**Vaginal Injections of Lactic Acid During Pregnancy.** Schweitzer<sup>2</sup> has tried to lessen the number and change the character of bacteria in the vagina during pregnancy by vaginal injections of lactic acid. It was found that this method produced a marked lessening in the number of bacteria present, and also altered the character of the germs. The longer and more thoroughly the injections were given, the better was the result. The influence upon the morbidity was considerable, for, in 54 cases in which the injection was practised thoroughly and for some time, but 1.85 per cent. had fever after delivery; while of those in whom the injections were not given thoroughly and for some time, 16.67 per cent. had fever; and among those cases in which no injection was given, the percentage of disturbance in the puerperal period rose to 19.57 per cent.

**Unusual Complications with Fibroid Tumor in a Pregnant Uterus.** Reid<sup>3</sup> describes the case of a patient, aged thirty-seven years, who had three children. Her periods had been regular, but there were eight weeks of amenorrhea. Six days before examination she felt a sudden pain in the right side of the pelvic region and next day had pain, but was able to go about. The following day—three days before she was examined—the pains were worse, increased in severity, and vomiting and inability to sleep developed.

When seen, the patient was pale, with anxious expression, pulse 100, temperature 99° F. There was a swelling in the right iliac fossa extending to the umbilicus, intensely painful to touch, firm, elastic, and dull

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 32.

<sup>2</sup> Ibid., No. 9.

<sup>3</sup> Journal of Obstetrics and Gynecology of the British Empire, August, 1914.

to percussion, without fluctuation. There was great rigidity over the tumor, and somewhat lesser rigidity over the abdomen.

Upon vaginal examination, the cervix was soft and could be moved freely without pain, apparently without communicating with the tumor. The body of the uterus could not be felt, but was apparently behind the swelling. There was no hemorrhage from the uterus and no bulging into the pelvis.

A diagnosis was made of two months' pregnancy with probably an ovarian cyst with twisted pedicle. It was thought unlikely that a tube had ruptured into the right broad ligament because uterine hemorrhage was absent.

Upon opening the peritoneal cavity, several ounces of dark, venous blood gushed out, and the small intestine, peritoneum and omentum were adherent about the tumor. When these were separated, a soft fibroid the size of a full-term fetal head, extruded from the uterine wall to the right of the fundus. The rent in the uterus was fully five inches long, the edges of the tear ragged, with slight venous bleeding. The fibroid had burst its capsule and half of it lay external to the uterine wall; the body of the womb was enlarged, suggesting a pregnancy of several months. The tumor was easily shelled out and the bleeding stopped after catgut sutures had been inserted to close the rent in the uterus. The abdomen was closed without drainage.

Upon examining the tumor, it was found to be in an early stage of red degeneration. The pain entirely ceased after operation, and the patient made a good recovery. About three months later the pregnancy was pursuing a normal course, and the patient was in good condition.

**The Tolerance of the Uterus to Full-Term Pregnancy in Spite of the Retention of a Intra-uterine Tampon.** An interesting case illustrating the tolerance which the pregnant uterus sometimes displays to a foreign body was reported by Kuntzsch.<sup>1</sup> He entitles his paper, "The Tolerance of the Uterus to Full-term Pregnancy in Spite of the Retention of an Intra-uterine Tampon."

The patient had curetting performed for a placental polyp, and, as there was considerable hemorrhage, the uterus and vagina were packed with gauze. In spite of the physician's advice, she left the clinic, removed the vaginal tampon herself, allowing the uterine tampon to remain. She had symptoms of metritis afterward and was treated by various physicians; a few weeks after leaving the clinic, pregnancy ensued and went to term.

As the head was expelled, a gauze strip five meters long was extruded before the head. The patient made an uninterrupted recovery.

**Spontaneous Rupture of the Uterus During Pregnancy.** Bauerisen<sup>2</sup> reports a case illustrating the fact that the uterus may rupture spon-

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 5.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 3.

taneously during pregnancy. The patient was a primipara, unmarried, aged twenty-four years. She had always been healthy. At eight months gestation she fell violently upon the stairs in a sitting posture. Severe abdominal pain followed, which obliged her to go to bed. Without having medical advice, she resumed her work, and labor began about eight days before the expected termination of pregnancy. The midwife in attendance noticed nothing unusual, but after eight hours of regular uterine contractions the pain suddenly ceased. The abdomen and the uterus became sensitive and tense, and the pulse 140, and fetal heart sounds could not be heard.

Upon admission to the clinic it was thought that premature separation of the placenta was present. The cervix was dilated and a dead child perforated and extracted without much hemorrhage. Half an hour later the placenta was expressed and the patient became considerably worse. Upon section, there was about two quarts of blood in the abdomen, and the placenta partially extruded through a rent in the uterus upon the left side. Hysterectomy was done, and the patient's recovery was retarded by a collection of serum or blood in the left hypogastrium, which was absorbed.

Upon microscopic examination of the body of the removed uterus, there were changes in its tissues which indicated that at the time of the fall the attachments of the placenta were partly destroyed, although most of the placenta remained adherent. When labor began, uterine contractions had increased the placental separation, while the first alteration in the placenta had weakened the wall of the uterus and made the spontaneous rupture easily possible.

**Shotgun Wound of the Abdomen with Rupture of the Pregnant Uterus.** Lincoln Davis,<sup>1</sup> of the Massachusetts General Hospital, Boston, reports the interesting case of a pregnant woman brought to the hospital about thirty minutes after she had been shot in the abdomen with a shotgun at close range. The abdomen was distended and there was an irregular lacerated wound in the lower half from which two or three coils of small intestine protruded and blood oozed freely from the wound. No powder burns could be seen, and no wounds of exit were found. The left leg and foot were moderately swollen from varicose veins. The temperature was normal, the pulse 63.

Operation was done as soon as possible, and forty small perforations were found scattered along several feet of the bowel, and in some places shot could be palpated in the wall of the bowel. Gas and small quantities of frothy matter exuded from some of the perforations. These were infolded with purse-string sutures of silk, the intestines carefully washed in warm salt solution and replaced. There was considerable blood in the abdominal cavity, and upon further examination, a large

<sup>1</sup> Journal of the American Medical Association, July 18, 1914.



uterus was found with a rent in the anterior wall about four inches long, through which the umbilical cord protruded. A four months fetus was lying loose in the abdominal cavity. The placenta was removed from the uterus manually, and the uterine wall closed with catgut. The patient was given ergot hypodermatically. The abdominal cavity was irrigated with warm salt solution and cigarette drains were placed in the right iliac fossa and in the pelvis. The patient made an excellent recovery.

It is interesting to observe that although the direction of the wound was distinctly transverse, the uterus was ruptured in a longitudinal direction, and no marks or shot-wounds were found on the body of the child. This would indicate that rupture of the uterus was the result of a bursting strain rather than actual perforation by the shot.

**The Treatment of Albuminuria in Pregnancy.** Ill<sup>1</sup> believes that cases that come to observation early in pregnancy, when albuminuria is promptly recognized, usually yield successfully to treatment. When, however, toxemia and albuminuria rapidly develop, the issue is more uncertain.

In classifying these cases it is well to note the character of the albuminuria, the presence or absence of uremic symptoms, and the period of gestation. When the albuminuria is but moderate, with little kidney debris and with no uremic symptoms, restriction of diet and an occasional calomel purge is all that is indicated. In a primipara, before viability, with much albuminuria, rest in bed and active treatment are absolutely imperative. When the child is viable and the mother's unfavorable symptoms rapidly grow more pronounced, the patient must be kept in bed under close observation, with greatly restricted diet and purgation. All medicinal treatment should be employed before resorting to the induction of labor.

Venesection is often valuable in these cases.

When the patient is near term, with convulsions, or when there is edema of the retina and headache, abdominal Cesarean section should be chosen.

Forcible delivery through the vagina should be avoided, and the so-called forced labor is especially dangerous in many cases. When convulsions or coma do not develop until full dilatation, and the presenting part is well upon the floor, delivery by forceps gives the mother and child a good chance.

**The Pernicious Nausea of Pregnancy.** Bondy<sup>2</sup> describes an interesting case of pernicious nausea of pregnancy in a married primipara, who for several months had suffered severely with pernicious nausea, losing thirty-five pounds in weight, and being sent to the clinic for the interruption of pregnancy.

Rest in bed, a milk diet, and medical treatment did not control the

<sup>1</sup> Journal of the American Medical Association, July 11, 1914.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 6.

vomiting. The patient had slight icterus, with normal pulse and temperature; the examination of the urine was negative, and the uterus was in normal position.

The patient was transferred to the medical clinic and treated by irrigation of the stomach, nutrient enemata, cerium oxalate and tincture of iodine. Under this treatment, she lost five pounds more in thirteen days. She was then returned to the obstetrical clinic and was given 10 c.c. of normal pregnancy serum. This produced some improvement, and 15 c.c. was given in addition. Vomiting ceased, the patient was able to take solid food, and returned to the hospital, having gained twenty-nine pounds. She was in good general condition, and subsequently gave birth to a living, vigorous child in spontaneous labor.

Freund has collected, in addition to his one case, five others in which pernicious nausea was treated by normal pregnancy serum. The writer adds two others, making eight in all; in six of them recovery followed; in two, pregnancy was interrupted; two others are added in which horse serum and Ringer's solution were used.

The writer also reports the case of an unmarried primipara, aged twenty-one years, suffering from pernicious nausea. Under medical treatment and rest in bed she grew better, but the quantity of urine diminished, albumin was present, the pulse increased in frequency, and the patient lost weight. The hemoglobin was 50 per cent., and the thyroid gland was somewhat enlarged.

An examination of the contents of the stomach showed subacidity. There was a trace of albumin in the urine and bilirubin was present. There were no casts. The action of the heart was disturbed and the pulse was rapid and weak. Icterus increased, the patient grew worse, and pregnancy was interrupted without improvement. The patient became somnolent. Lucin and tyrosin appeared in the urine, and death followed without the expulsion of the embryo.

In this case a severe toxemia was undoubtedly present and the functions of the liver were greatly disturbed.

The writer also reports the case of a multipara in whom pregnancy was interrupted for pernicious nausea by dilatation, the use of the blunt curette, and intrauterine injection of alcohol. Following this procedure the patient collapsed, gradually rallied, but remained comatose. Two hours later she had severe hemorrhage which was very difficult to control. She slowly rallied, and on the ninth day, against the advice of physicians, left the hospital; on the following day she was brought to the medical wards unconscious, with convulsions. These seemed uremic in character and were speedily followed by death.

Autopsy showed diphtheritic endometritis and thrombosis in both ovarian vessels. The heart muscle was pale yellow, and friable; the liver not enlarged, the acini showing plainly and dotted with small,

pale-yellow spots; the kidneys were swollen and grayish-yellow, with areas of hemorrhage.

A pathological diagnosis was made of necrosis of the liver, embolic nephritis with necrosis, and septic endometritis.

Bondy accepts the toxemic theory of pernicious nausea, and calls attention to the fact that the presence of the corpus luteum, in addition to the impregnated ovum, would furnish materials which might readily produce toxemia.

As regard the prognosis in these cases, the rapid and progressive loss in weight is of considerable importance. Rapidity of the pulse is not an absolute index, for the pulse may reach 132° without a fatal termination. The quantity of urine secreted is of importance, and also the quantity of albumin. A small amount of albumin and a few casts are not of grave import. Urobilin may be present in varying amounts, and lucin and tyrosin are sometimes present and sometimes absent.

The writer has no opinion to express concerning the importance of the ammonia coefficient.

The interruption of pregnancy in severe cases may not save the patient's life. In the writer's 21 cases, 2 died, and, in these 2, pregnancy had been interrupted.

The reviewer has recently had an interesting experience with *normal sterile horse serum*. The first case was that of an ill-nourished primipara, whose pregnancy was illegitimate, and who had concealed the fact and had suffered great mental distress by reason of her condition. She was sent to the Surgical Department of the Jefferson Hospital because vomiting, blood-tinged, had given rise to the suspicion of ulcer of the stomach, for which operation was considered. An early pregnancy was discovered, and the patient was transferred to the Maternity Department.

Upon admission, her condition was grave, with profound anemia, very deficient elimination, slight jaundice, failure to retain food, prostration, emaciation, and rapid and weak pulse. Pregnancy was immediately interrupted by dilatation, and packing the uterus. No effort was made to clear away the ovum. Shortly afterward the patient discharged considerable decidua, and in various portions the ovum was gradually expelled. The patient improved slightly, but there was considerable oozing hemorrhage, and her ultimate recovery seemed doubtful. Twenty c.c. of horse serum was then injected twice daily for several days, then once daily. The patient immediately improved and ultimately made a good recovery.

It is true that her improvement may have been coincident with the gradual destruction of the fetal elements in the chorion and decidua. The improvement followed so promptly after the injection of the serum that there seemed reasonable ground to believe that it had benefited the patient.



**The Changes in the Eyes in Cases of Nephritis and Eclampsia.** Adam,<sup>1</sup> in 935 cases of nephritis in various sorts of patients, found retinitis present in 209, or 22.4 per cent. In examining these patients he used two drops of a 5 per cent. cocaine solution, or 1 per cent. homatropine. Occasionally complete blindness develops, and, if it should be on one side only, it indicates plugging of the central artery of the retina. If it is bilateral, it is a symptom of uremia. Where the field of vision is altered, so that in looking at a person the patient sees an individual without legs or without head, this indicates separation of the retina, and, less often, plugging of a central vein. The optic nerve in these cases is greatly reddened and swollen, but does not resemble the optic nerve in syphilis; the papilla is surrounded by a clear space which gradually extends into the retina. The central vessels show evidences of atheroma, the arteries being narrowed and the veins dilated. The alterations in the retina are seen in the form of small white blotches whose formation accompanied hemorrhage of varying degree. There is no pigmentation in albuminuric retinitis, and this is a differential point between this condition and syphilitic chorioretinitis.

In these cases separation of the placenta is, unfortunately, not uncommon. More often plugging of the central artery or vein is present.

As recovery ensues, extravasated blood is observed, the whitish areas disappear gradually, and atrophy develops. Upon microscopic examination the whitish areas are found to be fatty degeneration, and treatment with osmic acid shows lesions in the bloodvessels of the retina.

The prognosis as regards complete recovery to normal vision is always guarded, as permanent injury is the usual result.

As regards the prognosis for the patient's life, the occurrence of albuminuric retinitis is not a crucial event. It is usually stated that a person suffering from nephritis in whose case retinitis develops, has not more than three years to live, but this prognosis cannot be applied to the pregnant patient.

As regards treatment, many would immediately interrupt pregnancy should retinitis develop. Pregnancy could be interrupted so soon as the first appearance of the disease gave warning. If considerable time has elapsed, and the retinitis is widely spread, the interruption of pregnancy will do no good. It is much more important to watch the pregnant patient so carefully that retinitis does not develop.

When a mother positively declines the interruption of pregnancy, and states that she will take the risk to her vision and continue the pregnancy, this decision cannot be appealed.

The writer's experience in examining the eyes of eclamptic cases was composed of 92 patients in the University Frauen Clinic at

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 6.

Berlin; 44 of these patients had complained of the disturbance of vision. In 4, there was a distinct development of retinitis or neuroretinitis. Albumin persisted in the urine of these cases after their confinement, while in other pregnant patients a small quantity of serum albumin disappeared.

If the 4 cases of retinitis are subtracted, 88 cases of typical eclampsia remain, of whom 40 had disturbances of vision. In 36 of these patients the ophthalmoscopic examination showed no evidence of disease; while in 4, the characteristic retinitis was present. This consisted in areas of infiltration, with sharply defined sclerotic vessels, and in one patient an opportunity occurred to examine the eyeball.

The prognosis depends upon the degree of actual involvement of the retina. Cases of uncomplicated eclampsia recover, the vessels promptly becoming normal when the eclampsia subsides.

**The Relations of the Corpus Luteum, Menstruation, and Pregnancy.** Miller,<sup>1</sup> from Menge's Clinic in Heidelberg, reports the results of his studies in this direction. He believes that a distinct relationship has been established between ovulation and menstruation and that the rupture of the Graafian follicle occurs nine days before the appearance of the period. When the ovum is passing through the tube, the membrana granulosa is forming in the follicle of the corpus luteum. The fresh corpus luteum gives no reaction for fat, but as it begins to undergo degeneration this reaction is present. The corpus luteum of pregnancy gives practically no evidence of fat during the entire duration of the pregnancy.

Upon microscopic examination one could recognize the corpus luteum of pregnancy by the presence of colloid drops and calcareous material, while the test for fat would give a negative result. The corpus luteum is practically a gland with an internal secretion, which is formed periodically and whose function it is to stimulate the growth of decidua, for which the presence of the ovum is not necessary. This decidua is prepared for the implantation of the ovum subsequently. This body acts practically as a trophic centre and inhibits the further formation of ova during its existence. The so-called lactation atrophy of the uterus results from failure in the formation of the corpus luteum. It has been impossible to isolate the internal secretion of the corpus luteum with any great success. The toxic disturbances of pregnancy result through failure in the function of the corpus luteum. Menstruation has to do simply with a hyperemic condition of the uterus. It has nothing to do with the possibility of conception. In determining the period of pregnancy, it is best to reckon its beginning at ten days before the last period.

Marcotty<sup>2</sup> writes at considerable length upon *the structure and functions*

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ci, Heft 3.

<sup>2</sup> Ibid., Band ciii, Heft 1.

of the corpus luteum in menstruation and pregnancy. He draws attention to the fact that the menstrual curve alternates and has its beginning in the mid-period between the termination of two periods. At this time the Graafian follicle ruptures. In the Graafian follicle the blood and pigments present in that body at menstruation, are absent. Upon minute microscopic study, the radical differences between the corpus luteum in menstruation and in pregnancy can be clearly recognized.

**A Case of Leukemia in Pregnancy.** Peterson<sup>1</sup> reports the case of a young married woman who had for seven years suffered from headache and prostration. When her first pregnancy began there was no especial disturbance in her general health. When about eight months advanced, she suddenly became very anemic, with frequent attacks of vomiting. She had a severe stomatitis for which she consulted a physician, by whom she was treated with iron and arsenic. Two weeks later, upon admission to the hospital, she complained of pain in the neck, with severe swelling of the lower extremities.

Upon admission, the urine was normal, the patient apathetic, the liver enlarged, the spleen palpable but not sensitive, and no intestinal involvement could be made out. The red blood cells were 1,800,000, the hemoglobin 25 per cent.; the blood was watery and more brown than red. The examination of the blood did not indicate leukemia, and yet pernicious anemia was absent. The blood conditions seemed secondary. In spite of treatment, the patient grew steadily worse. At about term, labor developed and was spontaneous, terminating in the birth of a living and vigorous child. Within two hours, the patient died.

Autopsy showed all the organs anemic, with edema of hands, feet and face. The lymph glands were normal. Both ventricles were somewhat dilated, the valves exceedingly pale, the lungs were normal, the spleen enlarged, the kidneys greatly enlarged and a yellow brown, and the follicles in the intestine considerably altered.

**Hydorrhea Gravidarum.** van de Velde<sup>2</sup> has made some interesting observations on hydorrhea gravidarum in 2 typical cases between the eighth and ninth months of gestation, by injecting into the muscles methylene blue, as labor was beginning, and from six to nine hours afterwards taking the hydorrhea fluid through a speculum directly from the uterus. Two or three hours later, when the os was partly dilated, he ruptured the membranes and obtained the amniotic liquid for examination. In both cases the hydorrhea fluid showed no blue color and very slight chromogen, while the amniotic liquid was free from chromogen. In both patients the urine was clearly a greenish blue. In one patient the fetal urine was blue; in the other, the urine of the newborn child could not be obtained for examination.

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ciii, Heft 2.

<sup>2</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxv, Heft 3.



The writer's explanation is as follows: Elimination is normally performed largely through the kidneys. The coloring material, like methylene blue, is decomposed to some extent by the acid urine and colors the urine green or greenish blue. In a similar manner, coloring materials form in the body and are known as leukemia derivatives or as chromogen. These may be recognized in the urine by warming and adding 10 per cent. acetic acid. This substance does not dissolve in chloroform and so differs from methylene blue. The reactions of the fetal urine after injection seem to show that in the early stages of labor the fetal kidneys act, if at all, but very slightly, and yet in the last months of pregnancy the fetus has nothing to do with the formation of amniotic liquid.

**The Interruption of Pregnancy and Sterilization by Abdominal Operation.** Anderes,<sup>1</sup> of Zurich, reports 15 cases in which there was a distinct indication for interrupting pregnancy and for terminating the reproductive power of the individual.

The operation is conducted by using chloroform and oxygen in some patients; in others, oxygen, chloroform and ether. When the lung conditions are unfavorable, tropococain and pantopon were injected into the lumbar region. The patient is given secacornin by intramuscular injection before anesthesia. The abdomen is opened by transverse incision, the uterus drawn out as far as possible, a transverse incision made across the fundus, the edges of the uterus grasped by two tenaculum forceps, and the cavity of the uterus freely opened and the ovum shelled out with the finger. The uterine body is then curetted with a large curette to remove the decidua as thoroughly as possible. The wound in the uterus is then closed and both tubes are removed. Great care must be taken in closing the points where the tubes enter the uterus, as pregnancy may still occur if this is not done.

Linzensmeier<sup>2</sup> adds to the literature of embryology by a minute description of an early ovum obtained by vaginal extirpation of the uterus. He made a careful microscopic study of the tissues at the point of nidation, and his illustrations are instructive and interesting.

In the pathological Institute at Vienna, and in the first medical clinic, Bondi<sup>3</sup> has made experimental observations on the alterations which take place in the kidneys during pregnancy. By giving the animals arsenic, iodine and sugar, cantharadin, and other substances, artificial conditions were produced in the kidneys which much resemble those seen in pregnancy.

It is interesting to note that certain portions of the kidney of pregnancy are more susceptible to irritation than others, and that these are the epithelia of the straight tubes of the kidney and also of

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 4.

<sup>2</sup> Archiv f. Gynäkologie, 1914, Band cii, Heft 1.

<sup>3</sup> Ibid.

the convoluted tubes. This accounts for the frequent occurrence of albuminuria.

**Premature Separation of the Normally Attached Placenta.** Aschner<sup>1</sup> has made some observations in cases of premature separation of the placenta by examining the urine. Just previous to the emptying of the uterus, in one of these cases, he found a large percentage of albumin; on the following day the albumin had disappeared.

As this was evidently not a case of nephritis, the question arises whether, by the Abderhalden test, it may not be inferred that the albumin had come from the placenta. This points not to a condition of toxemia, but to some mechanical irritation or alteration in the attachment of the placenta. If the placenta be closely examined in such a case, after its removal, evidence of its gradual and premature separation may often be obtained.

**Pregnancy Complicated by Ileus.** Braun<sup>2</sup> reports the case of a multipara, five months pregnant, who, three weeks before admission to the hospital, had an operation for hernia. Shortly afterward she had abdominal pain near the umbilicus, and a sensitive tumor formed.

The diagnosis seemed to lie between an exudate or inflammation of the omentum, and the patient was given medical treatment for a time. She already had pulmonary tuberculosis, and became worse, with fever and symptoms of ileus. The tumor rapidly increased in size, so that operation was done with lumbar anesthesia. The tumor was found to consist of the transverse colon with a considerable mass of inflamed omentum which was removed, and a lateral anastomosis of the bowel performed. The scar of the previous operation was dissected out, to which the omentum had become adherent. Here there was a small collection of pus. The abdominal wound was closed and a small drain was left. During the next two weeks a small intestinal fistula formed, which seemed to be maintained by the obstruction to the passage of feces which resulted from the growth of the uterus. Accordingly, the uterus was emptied by vaginal section, and, three weeks later, with lumbar anesthesia, the fistula, which had very greatly diminished, was also closed. The patient ultimately made a good recovery.

**Suprarenal Insufficiency in Pregnancy.** Zuloaga<sup>3</sup> has found that toxemia arising from the absorption of villous tissue in the pregnant woman may seriously disturb the functions of the suprarenal bodies and ultimately result in lesions. Pernicious nausea of pregnancy may often be traced to this source, so may sudden death developing during pregnancy, labor, or in the puerperal condition. Pernicious nausea and high arterial tension both indicate insufficiency in the suprarenal glands.

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band cii, Heft 1.

<sup>2</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xl, Heft 5.

<sup>3</sup> Archiv. mens. l'Obstétrique, May, 1914.

The logical and efficient remedy lies in the injection of suprarenal substances or adrenalin. There is no evidence that the use of this agent produces abortion. Should this not be successful in controlling the condition, pregnancy must often be interrupted in the interests of the patient's life. Women showing evidences of suprarenal insufficiency during reproduction should remain under observation when not in the pregnant condition, and should receive medical attention. When the condition has been serious, such patients, like those having tuberculosis or serious disease of the heart, should be forbidden to marry.

**Chronic Intestinal Stasis.** This interesting practical topic is discussed at considerable length in several papers by Adami, Pringle, Gray, and Chapple.<sup>1</sup>

We are especially interested in the last paper, as Chapple is obstetric surgeon at Guy's Hospital, where Lane's work has been done in the treatment of intestinal stasis by the removal of the entire large intestine.

Chapple calls attention to the fact that in the human subject the large intestine tends to be constantly displaced downward. This is especially true in the female, owing to the wider pelvis and the much longer abdomen. This tendency is resisted by supporting bands which, when altered, may become pathological and prevent the proper drainage of the intestine. Surgeons are familiar with the obstruction at the end of the ileum, now called Lane's kink. To ascertain whether this might be of congenital origin, Chapple carefully examined the bodies of 31 fetuses, varying from four to nine months in development. In none of these could he find anything which might be considered a true Lane's kink. The congenital folds of peritoneum in the right iliac fossa are entirely different from the typical Lane kink; and in the left iliac fossa there are in the fetus no such thickening of the mesentery or adventitious bands. The effect produced by these bands upon the bowel is a matter of constant observation.

In operating upon a woman eight months pregnant, with almost complete obstruction at this point, producing repeated vomiting and distention, relief was obtained by simply undoing this kink.

Delay in the passage of fecal matter through the small intestine may be produced by an ilial kink, by a fixed appendix adherent behind the ileum which drops over into the pelvis, or by a simple stasis.

The writer considers the retention of matter in the small intestine to be a clinical phenomenon of the greatest importance.

The complaint of pain in pregnant women, often referred to the right lower abdomen, is frequently caused by an ilial kink, or by the appendix which is adherent and prevents the upward passage of the bowel as the uterus increases in size. In cases of persistent vomiting of pregnancy

<sup>1</sup> British Medical Journal, January 24, 1914.



which show no evidence of specific toxemia, the cause of the vomiting and right-sided pain may often be a kink in the ileum.

The degenerative changes brought about by intestinal stasis may often be seen in the breasts. Hardening of areas, cystic degeneration, and even cancerous change may be observed. Changes in the thyroid, loss of body fat, with prolapse of the organs, and retroversion of the uterus, are often observed. The loss of elasticity in the skin may result in unusual, and often excessive, laceration of the perineum in spontaneous labor. The uterus is always bulky, flabby, and retroverted in these cases, and occasionally practical occlusion of the rectum may be found through the forcing downward of the sharply retroverted and retroflexed uterus. That the heart muscle may also suffer is a matter familiar to medical clinicians.

The reviewer has repeatedly seen cases of pregnancy and labor in which ileal kink, adhesion of the appendix, and intestinal stasis were greatly complicating factors. In one patient, ulcerative colon-bacillus infection of the large intestine developed at the left ileal kink, with adherent appendix and partial obstruction on the right side. The removal of the appendix, the loosening of adhesions and the use of gauze drainage in the puerperal period, brought about a cure.

The reviewer recently operated upon a young primipara with severe and intermittent pain in the right lower abdomen, leukocytosis, disturbed excretion, and prostration. An early pregnancy complicated the situation. An adherent appendix was found, with an area of considerable infiltration about the ileum and head of the colon. Operation immediately improved the condition of the patient, her vomiting became less, and she gained steadily.

It is a fact familiar to obstetricians that appendicitis is especially dangerous in a pregnant woman because of the adhesions which form, and the fact that the emptying of the uterus may liberate septic matter. It is the part of wisdom to deal promptly with these cases surgically, so soon as a diagnosis is reasonably sure.

**Chorio-angioma.**—Nebesky<sup>1</sup> reviews the literature of the subject, referring to Deinst and his collection of 45 cases, and Kermauner's, who collected 28 cases, and added one. Since the publication of Kermauner's paper, Nebesky has collected 16 cases from the literature, and adds another.

The patient was a multipara who had a rapid, spontaneous delivery of the placenta. The child was not vigorous, but not asphyxiated, and was nursed by the mother. Both were discharged from the hospital in good condition. The amniotic liquid was not excessive.

In studying the placenta, it was round, the umbilical cord inserted nearly centrally, and a tumor was found in the substance of the placenta

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 1.

upon its fetal aspect. There was nothing abnormal about the umbilical cord. The tumor was the size of an average orange, firm, brownish red, and at one portion yellowish gray in color. The amnion could be separated from the tumor. From the insertion of the umbilical cord, vessels proceeded to the tumor. On the maternal aspect of the placenta at the location of the tumor, there was a yellowish portion which could be plainly distinguished from the surrounding tissue. The tumor embraced the entire thickness of the placenta.

Upon microscopic examination the amnion was normal, the connective tissue of the chorion showed some calcareous changes and beneath the chorion a thin layer of fibrin. The tumor itself was different from the villi of the chorion and was practically angiomatous in nature. The capillaries were packed closely together and most of them were filled with blood. Cavernous dilatations were seen at many points, also distended with blood. In many of the vessels the endothelia had disappeared, and the epithelial cells of the tissues stained with remarkable brilliancy and showed varying forms.

That the tumor was a separate mass of tissue, and angioma of the vessels of the chorion was present, was plainly shown by this examination. Such a tumor does not affect the health of the mother in the least. It does, however, interfere with the nutrition of the fetus, and in some cases polyhydramnios is present. In one case the child died from hemorrhage during birth. In another, the child was born prematurely.

The fetal mortality in these cases is reckoned from 35 to 40 per cent. The situation of the tumor and its size do not seem to make it different.

**Tuberculosis of the Larynx Complicating Pregnancy.** Raspini<sup>1</sup> finds that tuberculosis of the larynx is the most dangerous form of tubercular infection for the pregnant patient. The tubercular disease invariably increases rapidly in severity. Pregnant women complaining of disturbance of the throat should be examined with the laryngoscope to avoid overlooking this dangerous condition. Laryngeal tuberculosis always exists with pulmonary tuberculosis, and both are greatly increased by pregnancy. In the first half of gestation the pregnancy should be immediately terminated. If the patient is in the latter portion, and earnestly desires the life of the child, her life may be prolonged by tracheotomy, until the child has been born. After the sixth month of pregnancy, should the patient grow rapidly worse, induced labor is indicated. During the puerperal period laryngeal tuberculosis sometimes lessens in violence, which is in contrast to pulmonary tuberculosis.

In conducting induced labor, should dangerous dyspnea develop, tracheotomy must be performed. All cases must be studied individually, and a very guarded prognosis given regarding it.

<sup>1</sup> *La Ginecologia*, 1914, x, 6, p. 161.

**Diabetes Complicating Pregnancy.** Calorni<sup>1</sup> has observed symptoms develop during pregnancy which point to genuine diabetes. One must remember, however, that polyuria is very common in pregnancy without a serious condition being present, and that it disappears readily after the birth of the child. Acetonuria in pregnancy is frequently the result of auto-intoxication peculiar to the condition. The glycosuria present is due largely to the nervous instability of the pregnant woman and to the disturbance in the intestinal secretions. Very rarely are the functions of the liver genuinely disturbed. Occasionally pregnancy is complicated by a genuine diabetes mellitus. This disorder is less common among women than among men, and usually appears after the menopause. Various diseased conditions are recognized as accompanying genuine diabetes in the pregnant patient. The disease is more common in the first half of gestation. It is more usually the case that women conceive who already have diabetes, and in some cases the pregnancy seems little, if at all, disturbed by the diabetic condition.

The prognosis for the child is very doubtful, as in 50 per cent. the fetus is not carried to full term. Polyhydramnios is present in 28 per cent.

The mortality of the newborn rises to 62 per cent. Puerperal infection is rare among these mothers, and the puerperal period is seldom disturbed by any complications from this source.

In general, diabetes is such a serious complication of pregnancy that women who have this disorder should be warned against marriage.

As regards treatment, dietetic management is of primary importance. When the disease is severe, pregnancy should be interrupted. If the patient goes to term, she must not nurse her child, and she should be closely watched during labor, as, if symptoms of intoxication develop, she will require prompt and skilful treatment.

Two papers on almost similar subjects appear in the *British Medical Journal*, February 14, 1914. The first, "The Nature of Pregnancy and Its Practical Bearings," by Ballantyne, and the second, "An Antinatal Hygiene," by Amand Routh.

Ballantyne defines pregnancy as a harmonious symbiosis. The organism and the mother respond to the stimulation of pregnancy, and pregnancy is practically physiology at high pressure. The biological blood test for pregnancy is rational and valuable, and the disorders of pregnancy can often be traced to variation in the condition or action of the ductless glands.

Ballantyne urges the importance of antinatal and pre-maternal hospitals.

Routh would have compulsory registration of stillbirths and abortion.

Every poor woman should receive medical supervision during preg-

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 1.



nancy. Pre-maternal wards should be commonly established with anti-natal research laboratories in our large hospitals. Financial assistance, if needed, should be given to poor pregnant women during the latter months of pregnancy. He takes up in detail the various abdominal conditions and diseases which may complicate parturition.

**The Albuminuria of Pregnancy.** Hinselmann<sup>1</sup> reviews the various theories, including the deductions from the Abderhalden test concerning the albuminuria of pregnancy. He draws attention to the Abderhalden test as a means of diagnosing toxemia.

**Vaginal Injections During Pregnancy to Influence the Bacterial Content of the Vagina.** Zweifel<sup>2</sup> has made experiments in the Leipzig clinic to determine the value of vaginal antiseptic douches during pregnancy in destroying bacteria in the genital tract.

Zangemeister found that 70 per cent. of parturient patients having fever were infected by cocci, in which the streptococcus was most abundant, and very frequently hemolytic. Of those patients who had streptococci in the birth canal before labor, 86 per cent. had them during the puerperal period. They seemed to become hemolytic after the birth of the children in many cases. Vaginal examination did not seem to make much difference in his cases in the presence of hemolytic and non-hemolytic streptococci.

Among the antiseptics employed was a preparation of oxycyanate of mercury; also bichloride of mercury 1 to 2000, lysol, potassium permanganate, acetic acid, boric acid, distilled water, 2 per cent. nitrate of silver.

In 44 patients, 4 had fever during the puerperal period; 2 of these had received douches of bichloride of mercury; 1 had injections of an acetic preparation; 4 of lysol and potassium permanganate. These latter seemed to have hindered the growth of bacteria, but did not entirely prevent it.

If tincture of iodine were employed thoroughly to the vagina, and tampons dipped in alcohol used, the growth of bacteria could undoubtedly be lessened. The injurious effect produced by the injections of distilled water, boric solution, and acetic preparations, was an increase in the number of leukocytes.

The conclusion is reached that in healthy patients such precautions do not protect against infection, and are of positive harm.

**Tetanoid Symptoms in Pregnant and Puerperal Women.** Kreiss<sup>3</sup> reports from the clinic in Dresden that cases with tetanoid symptoms and with increased galvanic irritability in various nerves of the body, are by no means uncommon. In 50 such patients no genuine tetanus could be observed. Many of these patients were anemic multiparæ or ill-developed primiparæ.

<sup>1</sup> Monatschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 5.

<sup>2</sup> Ibid., Heft 4.

<sup>3</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 1.

The diagnosis was comparatively easy, as the tetanoid contractions are typical, and makes the differential diagnosis comparatively simple.

**Bacteria in the Urine of a Pregnant Patient.** Kuirhari<sup>1</sup> examined the urine of 70 pregnant patients. In 17 cases the urine was cloudy; in 7, pyuria was present. The bacillus coli communis was the cause of the pyuria, while in the remaining, the cloudiness was the result of ammoniacal degeneration without the agency of bacteria.

**An Inquiry into the Metabolism of the Pregnant Patient as Regards Albuminoid Substances in Relation with the Functions of the Ductless Glands.** Under this comprehensive title, Landsberg,<sup>2</sup> from Veit's clinic in Halle, publishes a paper of considerable length and much interest.

He finds that, in all women of reasonably good health, the functions of nutrition are not genuinely disturbed by pregnancy. He believes that the normal pregnant woman has an increased appetite, not only because additional energy is required in pregnancy, but to account for the natural increase in her weight. Thirst is unquestionably greater in the non-pregnant. There is greater need for heat units and the processes of oxydization are in no way diminished, but rather increased. There is a universal tendency to hyperplasia throughout the body, which is due in some respects to the corpus luteum and the interstitial cells of the ovary. Through these two bodies the ovary exerts a distinct influence upon metabolism throughout pregnancy. The cells of the pregnant patient react to a lesser degree to thyroid secretion than do the non-pregnant. This is proven by experiment and also by clinical observation.

By experiment upon animals he concludes that the weight of the child does not depend upon the mother's condition of nutrition. The fetus is not a parasite upon the mother, but the two exist in harmonious symbiosis.

From experiment, he believes that from 350 to 450 calories are necessary in a food ration to secure the health of mother and child.

**Rupture of the Intestine Through Violence in a Pregnant Woman.** Amann<sup>3</sup> reports the interesting case of a multipara several months pregnant who fell while cleaning a window, and struck the right side of the abdomen against the corner of a piece of furniture. She suffered severe pain, which gradually subsided, followed a few hours later by slight bleeding from the vagina. During the next few days she was not very ill, but had diarrhea, which varied in severity. Then the bowel movements suddenly ceased, the abdomen became distended, and vomiting ensued. This gradually became fecal, when the patient was sent to hospital.

Upon admission, the heart and lungs were normal, the abdomen

<sup>1</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 1.

<sup>2</sup> Ibid.

<sup>3</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 6.

greatly distended, very tender in the lower portion, the pulse small and 140.

At operation, the intestinal coils were red and greatly distended. At the brim of the pelvis, very foul pus was found, and in the pelvis behind the uterus the left ovary was covered with fibrin and contained a small cyst. The tube was reddened and swollen. A small perforation was found in the intestine and the walls of the bowel were so infiltrated that it was determined to make an intestinal fistula until the immediate danger of fatal peritonitis could be avoided. Strips of iodoform gauze were inserted as drainage. The left ovary and tube were removed as they formed part of the wall of the abscess and were diseased, and drainage through the vagina was instituted by opening the posterior wall. Abortion followed, the drainage was successful, but the intestinal fistula remained. This was closed by a second operation and the patient's recovery was satisfactory.

Amann quotes White's case<sup>1</sup> in which a patient three months pregnant attempted to lift a heavy basket, and on the following day had peritonitis. At abdominal section pus was found in the abdomen, with fibrin covering the coils of intestine, and a transverse perforation of a portion of the ileum. This was closed and drainage was inserted. Abortion followed seven days later, but the patient finally recovered.

Petry collected 219 cases of subcutaneous injury to the gastrointestinal tract, in which 21 occurred in the stomach, 172 in the small intestine, and 26 in the large intestine, the most frequent sites of injury being the jejunum and the ileum.

**The Diagnosis and Prognosis of Alterations in the Kidneys Complicating Pregnancy.** Wolff and Zade<sup>2</sup> contribute an interesting and detailed paper upon this subject from the Obstetric and Eye Clinics at Heidelberg.

They find that it is impossible to make distinctions between the different varieties of changes in the kidneys complicating pregnancy. There can be no doubt but that from the so-called kidney of pregnancy, and after many cases of eclampsia, a chronic nephritis develops. A patient who in one pregnancy has had overburdened kidneys is liable to the same, or to a more severe, condition in a subsequent pregnancy.

A genuine albuminuric retinitis may accompany the kidney of pregnancy and eclampsia, independently of chronic nephritis. When a patient who has suffered from a chronic nephritis becomes pregnant, the occurrence of albuminuric retinitis is not so serious as if the pregnancy had not occurred. After the termination of pregnancy, the retinitis may entirely disappear.

**Corpus Luteum and Substances and Their Influence Upon the Body.** In the *Monatsschrift f. Geburtshülfe und Gynäkologie*, 1915, Band xli,

<sup>1</sup> Lancet, 1901.

<sup>2</sup> *Monatsschrift f. Geburtshülfe und Gynäkologie*, 1914, Bands xxxix and xl, Heft 6.



Heft 1, Herrmann publishes a paper of considerable length narrating experimental studies, and illustrated by microscopic sections. His aim was to extract from the corpus luteum and from the placenta the chemical substances which should prove capable of causing varying effects upon the body of an animal. This he succeeded in doing, and believes that these substances have a decided influence upon the growth and development of the genital organs. Probably these substances have to do with the differentiation of sex in the embryo. The same element which causes the development of the genital organs also produces the growth of the mammary glands; and a further function of this substance is to produce the characteristic changes of early pregnancy.

**Cholelithiasis Complicating Pregnancy.** Amann<sup>1</sup> describes the case of a patient, aged forty-two years, a multipara, who, in the fifth month of pregnancy, was taken with prostration and general symptoms, supposed to be influenza. Five days later the patient had a chill, followed by reaction, and gradually recovered. Some weeks after this a tumor of some sort could be made out on the right side of the abdomen above the right anterior superior spine. Palpation over the region of the liver was negative. Pain gradually developed in this area, the tumor grew larger, and the patient began to have fever. Icterus was absent, constipation was present, and the attacks of pain were distressing.

Upon admission to the hospital, the patient was pale, emaciated, with 58 per cent. of hemoglobin, and 6900 leukocytes. The urine contained no bile coloring matter.

The tumor was present on the right side underneath the umbilicus and seemed to be connected with the abdominal wall. It was supposed to be a fibroma of the abdominal wall, or else an internal growth originating at the head of the cecum or in the gall-bladder.

At operation, the tumor was firm and fibrous in character and was followed down into the abdominal cavity, when it was found that the presence of the tumor, originating in a fibrous mass in the abdominal wall, had caused inflammation and adhesions in the appendix and in the gall-bladder, and that the gall-bladder had ruptured and extruded a stone. It was possible to remove the tumor, appendix, and gall-bladder, and to make a pedicle for the tumor from the surrounding tissues, leaving the appendix opening closed, and removing the gall-bladder entirely. Drainage was employed for several days after the operation.

Unquestionably, the pressure of the pregnant uterus had something to do with the displacement of the appendix and the inflammatory process which had taken place in the appendix and gall-bladder. In embryonal life, the cecum, liver and gall-bladder are close together,

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xli, Heft 1.

and it is possible that in this case the cecum retained its embryonal characteristics, which happens in 3 per cent. of female bodies.

**Atresia Complicating Pregnancy.** Ruge, from Bumm's clinic in Berlin, contributes a paper to the *Archiv f. Gynäkologie*, 1914, Band cii, Heft 2.

His first case was that of a primipara in labor with very slow progress, although uterine contractions were good. The external os was completely closed, and, on examination with a speculum, but a very small opening could be made out. On dilating this, a septum was found dividing the cervix. Labor gradually developed spontaneously, the patient delivering the child without assistance, and making a good recovery. Upon examination before the patient left the hospital, the conditions were normal.

The second case was that of a woman brought in a dying condition to the hospital, with the statement that four hours previously she had been suddenly seized with convulsions. Upon examination, the fundus was at the umbilicus, and the uterus hard and firm, so that palpation of the fetus could not be made out. Fetal heart sounds could not be heard. The urine obtained by catheter was very bloody and contained albumin and granular casts.

Upon internal examination, the external os admitted one finger, but the lumen of the cervix above was completely closed by tissue which felt like a fibroid tumor. As the patient's convulsions were becoming more severe, the uterus and adnexæ were extirpated. The patient died shortly after in coma, and autopsy showed the characteristic lesions of eclampsia.

Examination of the uterus showed the site of the atresia was the border between the body of the uterus and the cervix. Here the internal os had become completely closed by the inflammatory process, with a free overgrowth of epithelia. Microscopic sections illustrate the paper.

**Ectopic Gestation.** THE TREATMENT OF RUPTURED ECTOPIC GESTATION IN THE EARLY MONTHS. Olow<sup>1</sup> reports, from Essen-Möller's clinic in Sweden, the results obtained in the treatment of ruptured early ectopic gestation. He styles these chronic cases, and finds that some of them will undoubtedly recover whether treated by the expectant plan or by operation. Others demand operation. It is safer to operate upon all, and one cannot clinically separate those cases which might recover without operation from those which demand it.


As regards the treatment of hematocele which has become infected, there can be no question about the wisdom of emptying the collection. Wherever possible, this should be done through the vagina, and often a broad, simple incision will suffice. One can form a good idea whether

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 1 and 2.

the ovum is dead by noting whether the blood which escapes by incision is extensively decomposed or not. Should decomposition of the blood have set in, there can be no question about the death of the embryo.

THE ANATOMICAL STUDY OF EARLY TUBAL PREGNANCY, WITH REFERENCE TO THE QUESTION OF DECIDUAL REACTION IN ECTOPIC GESTATION. Caturani,<sup>1</sup> from the Pathological Department of Cornell University, publishes a study of the specimen obtained from a woman, aged thirty-four years, who had already given birth to one child. Four weeks after the preceding menstruation, the patient was taken with severe pain, followed by collapse. Three hours afterward operation showed free blood in the abdominal cavity. There was continuous oozing from a small rupture on the upper side in the left tube near the uterus. This was removed, followed by the recovery of the patient.

Microscopic examination of the specimen yielded some excellent illustrations, showing in the wall of the tube necrotic changes in the decidua, and cellular changes in the ovum. The process by which decidua is formed in the tube does not differ from that seen in the uterus. There was an attempt at the formation of a reflexa, although at the early stage the fetal and maternal elements are in relation by an intermingling of the plasmoidal elements within the decidual columns; but the Langhans cells are comparatively few, and grouped with the plasmoidium. No villi are deeply situated at this early stage.

PERITONEAL IMPLANTATION OF AN OVUM. Phillips<sup>2</sup> reports an ectopic gestation in which, at operation, bright blood was seen to be oozing from among the fimbria of the left Fallopian tube, but not from the ostium. The whole tube was slightly thicker than normal and was easily removed. Blood clot was removed from the pelvis, and, while sponging out the pelvis, a small, dark blood-clot-like nodule was seen on the left wall of the pelvis just below the brim. It was ovoid and projected half an inch above the general peritoneal surface. It was covered with peritoneum and there was no clot adherent to it, nor any blood escaping from it. The peritoneum was incised and the small tumor removed. The small wound made was easily closed. 

Upon examination, it was found to be a peritoneal mole, or early impregnated ovum, in which there had been hemorrhage. Some excellent gross and microscopic illustrations accompany the article.

ADVANCED ECTOPIC GESTATION. Beckmann,<sup>3</sup> from the clinic in Petrograd, reports two cases of advanced ectopic pregnancy,—one at the seventh month; the second, at full term. He has collected, principally from the Russian literature, thirty-seven cases of ectopic pregnancy in the latter months of gestation.

His first patient, a multipara, had been ill four months suffering

<sup>1</sup> American Journal of Obstetrics, October, 1914.

<sup>2</sup> Journal of Obstetrics and Gynecology of the British Empire, January, 1914.

<sup>3</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 2.



with abdominal pains. Upon admission to the hospital, she was anemic and very fat, which made palpation of the abdomen difficult. The temperature and the thoracic organs were normal. In the hypogastrium there was a tumor which seemed to fill the left half of the abdomen.

Upon vaginal examination, the cervix was displaced toward the right and in front, and the body of the uterus could not be made out. The external genital organs were bluish in color, and there was colostrum in the breasts. Heart sounds could not be heard, nor had the patient recognized fetal movements.

Upon opening the abdomen, there were found blood and clots in the abdominal cavity. The fetal sac was in the lower portion of the abdomen, displacing the uterus, and the sac was adherent to the bowel and to the omentum. The placenta was of good size, at the left sacroiliac joint, and extended down upon the rectum. The child was readily extracted and the head had practically been in the pelvic cavity. The placenta was readily separated, followed by some hemorrhage, and the removal of the placenta and sac caused a penetrating wound of the intestine at the flexure of the rectum. This was repaired, the fetal sac entirely removed, and the small vessels carefully tied. The right tube and ovary seemed normal, the left formed a part of the fetal sac. Gauze tampons were used to shut off the abdominal from the pelvic cavity and the ends of the gauze were brought out through the abdominal wound, which was not sutured.

The fetus was 35 cm. long, stillborn, and had evidently been subjected to considerable pressure. The patient died of peritonitis on the fourth day, and autopsy could not be obtained.

The second patient was a multipara admitted to the hospital complaining of severe pain in the right half of the abdomen. The temperature was normal, the pulse 90, heart and lungs normal, and the region of the liver sensitive to pressure. The abdomen was enlarged and tense, and apparently contained a large tumor the size of a nine months' pregnant uterus. Fetal heart sounds could be heard on the left side above the umbilicus, and the patient felt fetal movements. The cervix was high in the pelvis, and the os admitted one finger. The patient's suffering from abdominal pain was intense and often accompanied by abdominal distention and hiccough. The pain was cramp-like and colicky in nature, and had depressed the patient's general condition very considerably.

She would not, however, consent to operation and voluntarily left the hospital. She returned within a short time asking that operation be performed. Upon performing section, the omentum was greatly swollen and beneath it was found the fetus with the right shoulder uppermost. The head was in the left lumbar region, the feet in the region of the liver. The child was living, and cried as soon as extracted,

and expelled meconium and fluid. The placenta was large, attached to the fundus of the uterus above the umbilicus and to adjacent coils of intestine. It did not seem wise to attempt its immediate removal, and the fetal sac was tamponed with gauze and the abdominal wound left open. The child was 48 cm. long, and weighed 2550 grams. The right foot was somewhat deformed, both elbows bent, and the child had several minor abnormalities.

On the tenth day an effort was made to remove the placenta, but this was followed by hemorrhage. Hemostatic forceps were applied and allowed to remain. The patient's temperature rose and she died on the sixteenth day, with symptoms of peritonitis.

At the left upper angle of the uterus was found an opening with thick, pigmented edges which communicated with the fetal cavity. The placenta was inserted over this opening, causing the ectopic placenta previa.

THE FINAL RESULT AFTER FIVE YEARS IN ONE HUNDRED AND NINETY-TWO PATIENTS OPERATED UPON FOR ECTOPIC PREGNANCY. Smith<sup>1</sup> contributes a valuable paper whose scope is indicated by the title. When operating, the very same question arises if we remove one tube or ovary: What will be the future of the patient as regards ectopic disease in the remaining tube?

An analysis of the 192 cases shows that 48 had operations, or had already had an operation which made further pregnancy impossible. Of the 144 remaining in which pregnancy might occur, 47, or 32.6 per cent., had uterine pregnancy. There were 21 cases of repeated ectopic pregnancy; 2 patients had subsequent uterine and repeated ectopic pregnancy.

Essen-Möller's statistics show that 46 per cent. of patients operated upon for ectopic pregnancy had subsequent uterine pregnancy.

Prochownik had 43.8 per cent.; while the writer's statistics are 32.6 per cent. of uterine pregnancy after operation for ectopic gestation, and 14.6 per cent. who had repeated ectopic pregnancy, making a second operation imperative.

The question is then difficult regarding the removal of the sound tube when operating for ectopic gestation. The writer would decide upon the merits of each individual case. The age of the patient, the number of children she has, her general health, and her wishes as to future pregnancy, may all be taken into consideration.

In young and previously-healthy women, an apparently healthy tube may be left; in others, it should be removed.

The reviewer contributes one of the cases quoted by Smith in his paper—a patient who has had an interesting obstetric history. She was first operated upon for ruptured tubal gestation and the remaining

<sup>1</sup> Surgery, Gynecology and Obstetrics, June, 1914.

tube left. Uterine pregnancy then occurred, complicated by appendicitis. The reviewer then operated upon the patient a second time, removing the appendix without interrupting pregnancy. She went to term and was delivered of a living child. Some years passed, during which the patient became excessively fat, and took thyroid extract with advantage.

When considerably over forty years of age, another intra-uterine pregnancy occurred which went to term. In view of the patient's age and previous history, and the decided wish of her husband and herself that no further risk of pregnancy be taken, the patient was delivered by abdominal Cesarean section, followed by hysterectomy. Both mother and child made a good recovery from this operation.

THE DIAGNOSIS OF ECTOPIC PREGNANCY IN THE RIGHT TUBE BY PALPATION OF THE ILEO-CECAL REGION. Hausmann<sup>1</sup> calls attention to the necessity for studying the ileo-cecal region in all cases by a systematical and methodical palpation. So many conditions cause pain in this region that it is necessary to make as careful a differential diagnosis as possible.

In recognizing disease of the upper urinary apparatus, Hausmann draws attention to pain in the region of the iliopsoas muscle, high up, which he terms lumbar succession pain, produced by striking the back squarely across in the lumbar region with the ulnar border of the hand; and also the microscopic examination of the urinary sediment very carefully obtained.

He illustrates his paper with the report of several cases in which the differential diagnosis between pyelitis, appendicitis, and ectopic pregnancy was difficult to make. Periodic pain was common to all three, and only experience in palpation, and comparison in the reference of pain in the three conditions, can point to a correct diagnosis. In all cases of gravity, operation is a proper resort.

EIGHT MONTHS TUBAL PREGNANCY WITHOUT SYMPTOMS. At a meeting of the Edinburgh Obstetric Society, Croom,<sup>2</sup> president, reports the case of a woman, married eight years, without children, who was sent to the hospital with pregnancy complicated by polyhydramnios.

The abdomen was greatly distended with fluid, and apparently a pregnant uterus could be made out. Tuberculous peritonitis seemed the most probable explanation of the condition. The patient was very weak, and died suddenly. Autopsy revealed extensive tuberculous peritonitis.

Embedded in the adhesions was a tumor corresponding in size to a full-term pregnant uterus. Through a ragged opening on the left side projected a fetal foot. The tumor was at first thought to be a ruptured uterus, but a more thorough examination showed it to be an ectopic

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 6.

<sup>2</sup> British Medical Journal, February 28, 1914.



sac with a fetus near term. The uterus lay below the sac, measuring four and a half inches.

The interesting point in the case was the fact that pregnancy had reached this development without producing symptoms, even although rupture of the sac had occurred. Possibly the weakened condition of the patient from her tubercular disease rendered her less than ordinarily sensible to suffering.

In discussion, Fordyce had seen a similar case in which menstruation was absent for eleven months. The swelling was thought to be an extraperitoneal cyst, but proved to be an ectopic gestation.

**HEMORRHAGE IN RUPTURE OF ECTOPIC TUBAL PREGNANCY.** Taniguchi,<sup>1</sup> in Veit's clinic in Halle, has studied the source of the hemorrhage in ruptured tubal ectopic pregnancy: Does it come from the arteries or veins, or from the intervillous spaces? Does the hemorrhage occur before the rupture of the tube, or as a consequence of it? And what is the fate of blood extravasated through the bursting of an ectopic tubal gestation?

So far as his studies go, he finds that the point of rupture in the pregnant tube is not where the placenta is developing, but upon the opposite side of the tube. The entire wall of the tube in this region is suffused with blood. The congestion reaches such a point that rupture occurs.

As to a predisposition of any one point to rupture, it would depend upon the degree of infiltration and the resulting destruction of the peritoneal epithelia. He did not observe the penetrating action of chorionic villi sometimes described. The causal factor in the rupture of the tube is the sudden increase in tension in the envelope of the ovum through bleeding from the veins, with total stoppage of the circulation in the villi of the chorion. The villi rupture, and the muscle of the tube contracts to compress the villi. He did not find villous tissue in the arteries, and concludes that the villous ruptured tissue seen comes from the maternal blood. The free and copious bleeding observed in these cases has its origin in the intervillous spaces. This is the result of the direct opening of the arteries into the intervillous spaces; their multiplication at the source of attachment of the embryo; and the fact that they have but a short course from the larger vessels from which they spring.

**THE INFLUENCE OF ECTOPIC PREGNANCY ON THE UTERUS.** Sampson<sup>2</sup> bases his paper upon the study of twenty-five injected uteri associated with former ectopic pregnancies. His special purpose was to study the circulation of the uterus in these cases. His observations were confined to early ectopic pregnancy in which the uterus becomes larger than normal. This is produced by hyperemia and a thickening

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band cii, Heft 2.

<sup>2</sup> Surgery, Gynecology and Obstetrics, May, 1914.

of the endometrium. The changes in the latter resemble those found in the decidua vera of early uterine pregnancy, and vary with the age of the pregnancy.

In the earliest of his series, the compact layer formed only about one-fifth of the decidua, while in the more advanced it was more than one-half. The endometrium shares this change. Many arterioles are in the endometrium, about which decidua develops, and in very early ectopic pregnancy it is hard to distinguish this from the tissue found in the premenstrual stage of the non-pregnant uterus. The spongy layer in the tube is composed of hypertrophied glands, as in uterine pregnancy. Trabeculae or pillars composed of stroma, with branches of the arteries and veins, cross the spongy layer and unite with the compact layer of the myometrium. The arterioles are larger and more numerous than in the non-pregnant uterus, and the essential phenomenon is that of arterial invasion of the endometrium. The change in the uterine wall is that of arterial and venous hyperemia.

Undoubtedly the uterus contracts forcibly with the pregnant tube to expel the ectopic ovum. This contraction lessens the arterial supply of the endometrium and damages it; blood is extravasated into the venous spaces of the compact layer, and where the compact and spongy layers join. In the involution of the uterus, following the termination of ectopic pregnancy, we recognize a destructive or regressive change followed by a reconstructive or reparative change. In the various stages the arterioles of these parts are apparently few and it is difficult to detect the venous spaces dilated.

In most cases complete recovery from ectopic pregnancy is gradual, with repeated attacks of pain, and some of the products of gestation, such as chorionic villi, may remain in the tube in an active condition for several days, weeks, or months. The stimuli exerted on the uterus by pregnancy and involution seem to be antagonistic, and the changes found in the uterus in any given case will depend upon which of these predominate.

**ECTOPIC PREGNANCY AT TERM.** To those cases of ectopic pregnancy observed at full term Bürger<sup>1</sup> adds another. The patient was in her second pregnancy, and early in the condition had moderate hemorrhage from the genital organs for several days, which ceased when the patient remained quiet. For some time after, she had every two weeks attacks of cramp-like pain in the abdomen, with vomiting and purging, which her family physician thought were attacks of bilious headache.

When seen after one of these attacks, she was considerably prostrated, anemic, the abdomen distended, but the region of the gall-bladder not tender.

Upon vaginal examination, the cervix terminated in a tumor the

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 25.

size of a five months uterus, from which the uterus could not be distinguished. Examination of the blood showed 2,300,000 red cells, with hemoglobin 27 per cent. In the urine and feces there was a large quantity of urobilin.

The patient suffered from secondary anemia, caused by the absorption of extravasated blood. She asserted positively that she felt fetal movements, and earnestly desired a living child. She was accordingly kept under observation, with better care. The anemia considerably lessened, the abdomen increased in size, heart sounds could be heard, and the position of the child, transverse in the abdomen, could be made out. After several attacks of pain the patient thought that she no longer felt fetal movements, and operation was performed, by first dilating the cervix with Hegar's bougies, on withdrawing which it was found that perforation of the uterus had ensued, and the abdomen was immediately opened. A slightly macerated child situated transversely in the abdomen was found, and the uterus showed the perforation made by the dilatation. There was somewhat foul amniotic liquid in the abdominal cavity. The separation of the fetal sac was a matter of considerable difficulty, the appendix was removed, and the uterus extirpated.

Upon examining the specimen, it was found that the pregnancy had been primary abdominal. The patient made an uninterrupted recovery.

Werner<sup>1</sup> reports a case of primary tubal ectopic pregnancy which went to full term. The patient had slight hemorrhage after the cessation of menstruation, and the early months of pregnancy passed without much disturbance. Life was felt, when shortly after occurred a slight hemorrhage, which ceased. The movements of the child were not plainly felt, and finally pain set in, with bleeding. The physician called to attend the patient made a diagnosis of placenta prævia, and sent the patient to the hospital.

Upon internal examination there was found an elastic tumor in Douglas's cul-de-sac, and a large tumor so high in the abdomen that it could scarcely be reached by vaginal examination. The diagnosis was made of ectopic pregnancy, or pregnancy in the horn of a rudimentary uterus, while the tumor in Douglas's cul-de-sac was thought to be an ovarian cyst.

At operation, a large abdominal tumor, adherent, was present, and from a rent in the tumor emerged thin brownish amniotic liquid. It was difficult to separate the omental and intestinal adhesions; and was adherent to the uterus, which was removed with it. The patient made a good recovery.

Examination of the specimen showed a fetus weighing 3000 grammes; the body of the uterus and the pelvic tumor were removed with it.

<sup>1</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 2.



Probably the pregnancy had originally been in the left tube, which had ruptured, allowing the embryo to develop within the abdominal cavity.

### ABORTION.

**Air Embolism in Criminal Abortion.** Richter<sup>1</sup> draws attention to the frequency of air embolism in fatal cases of criminal abortion.

He describes the case of a woman, aged twenty-eight years, found dying in the kitchen of her dwelling, lying upon the floor unconscious and with stertorous breathing. The woman died ten minutes after she was found. Near her lay a syringe and a vessel containing soapy water. The clothing was not bloody nor torn.

The husband had been absent during the evening, but testified that on previous occasions his wife had made attempts to commit abortion. She supposed herself to be three months pregnant, and had been making similar attempts. She had told the neighbors that she could bring away the embryo by injecting soapy water.

At autopsy, the most important findings were the pericardium distended and tympanitic. In the pericardium was dark, fluid blood, containing air. There was also foamy blood in the right heart, and in both ovarian arteries bubbles of air were found. There was also blood in the uterus, an embryo 6 cm. long, and, at the site of the attachment of the embryo, fluid blood containing air.

The syringe was a long tube, one end terminating in a douche nozzle, the other for sucking up the fluid, and between the two a hollow ball to act as the dividing portion of the apparatus.

The second case was that of a woman found dead by her husband about 11 P.M. At 9.30 the husband had gone to sleep, and the woman had said something about taking a douche. The man was wakened by the crying of the child, and found the body of his wife in an adjoining room, where she had been sleeping with the child. The body was partly clothed, the head and back upon a chair, the left leg upon another, while on a table was an irrigating apparatus, a white powder in paper, a white cup containing fluid, and on the edge of the cup, colorless crystals. He placed the body of the woman in bed and tried to resuscitate her by making traction upon the tongue, while a midwife was called.

At autopsy, the pericardium contained clear, brownish-yellow fluid. From the right chamber of the heart bubbles of air could be obtained, with fluid blood. There was blood containing air in the veins of the pelvis and lower abdomen. There were also bubbles of air in the uterus and in the ovum.

Examination of the powder and the crystals in the cup showed that

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 5.

boracic acid was the substance used. The syringe was the same sort used in the first case.

**Various Methods and Apparatus for Preventing Conception and Producing Criminal Abortion.** At a meeting of the Gynecological Society at Breslau, Marmetschke, Biermer, and Alexander<sup>1</sup> discussed the subject of criminal abortion and sterility. The Society had an exhibition of various forms of instruments and apparatus designed for such use. Among the most commonly used were syringes of metal, or with rubber balls, terminating in long, thin nozzles which could be readily inserted into the uterus.

Five fatal cases were described following their use, in two of which death was caused by septic infection; in one, by poisoning with carbolic acid; and in two, through air embolism. In one fatal case the patient was not pregnant at all, but supposing herself so, had attempted to insert the syringe into the uterus, and had injected air into the circulation, which proved rapidly fatal.

In one case a midwife had attempted to use an intra-uterine stem pessary and had applied it in such a manner that the stem had perforated the cervix and had set up purulent perimetritis. In other cases the fact was brought out that powders and medicines supposed to be useful were sold by abortionists to induce the patients to visit their offices, where abortion was procured by interference.

The discussion of the evening was followed by the passage of resolutions by the Society condemning these methods and apparatus, and instituting a crusade against them.

An interesting paper upon "Gas Phlegmon after Criminal Abortion" by Dirks, Marmetschke and Kriebel<sup>2</sup> reviews the subject from the clinical standpoint, the medicolegal standpoint, and the work of the bacteriologist. In the latter, Kriebel injected cultures of bacilli taken from these cases into guinea-pigs, finding no difficulty in demonstrating the poisoning properties of the bacilli so obtained.

In the case under discussion, a young woman, who had formerly been perfectly healthy, was found unconscious in her lodging. She was brought to the hospital severely shocked and in a prostrate condition. She was first sent to the medical ward, where it was thought that she had taken some poison, although the examination of the urine was practically normal. The blood, when examined by spectroscope, gave oxyhemoglobin stripes. The patient was found to be several months pregnant, and was transferred to the obstetrical ward, where she became conscious, and stated that she had taken a vaginal injection of carbolic acid solution. Spontaneous abortion occurred, which was followed by fever and death, with extensive formation of phlegmon in the pelvic regions.

<sup>1</sup> Monatschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 4.

<sup>2</sup> Ibid., Band xl, Heft 3.

**The Treatment of Abortion with Fever.** Holst<sup>1</sup> treats cases of abortion complicated by fever by removing whatever can readily be taken from the uterus without violence, followed by 50 per cent. alcohol injection, and drainage by gauze for twenty-four hours. He uses ergotin by hypodermatic injection, and an ice-bag upon the abdomen. If the cervix is tightly packed, it is cautiously dilated with metal dilators. Narcosis is employed if necessary.

He uses only a blunt curette and with the greatest caution, his aim being to remove such tissue as is loose and which readily comes away. If peritonitis has developed, he tries to maintain moderate peristalsis. He finds benefit in washing out the patient's stomach, and giving, through the stomach-tube, a large dose of castor oil. In other cases sennatin has been useful when peristaltin and pituitrin have failed. He has seen benefit from hot, moist compresses over the stomach and transverse colon.

He reported 245 cases without fever, all of which recovered; 32 cases in which the uterus was emptied by the finger or instrument, with 31 recoveries; and 1 who was discharged at her own wish before she was completely well; there were 4 cases in which there was infection which extended to the parametrium, and all of these recovered; there were 21 cases of general septic peritonitis, of whom 16 recovered and 5 died; there were 6 cases of septic pyemia, of whom 4 died and 2 recovered.

**Two Cases of Purulent Peritonitis Caused by the Injection of Sublimate Solution Through the Uterus and Tubes to Produce Criminal Abortion.** Albrecht<sup>2</sup> reports two cases of pregnancy in young women at the seventh month in which purulent peritonitis and death followed the use of a solution of bichloride of mercury to produce criminal abortion.

Autopsy showed no evidence of rupture of the uterus or rupture of the tubes, and the fluid must have travelled through the uterus and out through the fimbriated extremity of the tube. One patient had the injection given by a midwife.

No statement is made concerning the strength of the solution, but the characteristic lesions and necrosis, with exudate, were present in the tissues in both patients.

## ECLAMPSIA.

**The Pathogenesis of Eclampsia.** Vertes<sup>3</sup> reviews the literature of the subject and has conducted experiments upon guinea-pigs to determine the cause of eclampsia. His experiments show that the pregnant organism is in a condition of anaphylaxis, resulting from the absorption

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 32.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 5.

<sup>3</sup> Ibid., Heft 3 and 4.



of elements from the villi of the chorion. These villous elements are capable of producing anaphylaxis, inasmuch as they consist of albuminoid bodies in relation with the general organism.

Eclampsia may best be defined as an anaphylactic shock. This is impressed upon one when we compare the great similarity between the symptoms of eclampsia and those of anaphylaxis, and also from the fact that those animals dying of eclampsia in his experiments showed at autopsy the organic lesions found in eclamptic patients. The very common prevalence of albuminuria in these cases is an added ground for holding this opinion.

**The Toxicity of Urine, Serum, and Colostrum in the Parturient Patient, with Especial Reference to Eclampsia.** Werner and Kolisch, from Wertheim's clinic in Vienna, publish a paper giving the results of their studies upon this subject in the *Archiv f. Gynäkologie*, 1914, Band ciii, Heft 1. They found that the urine of healthy, non-pregnant individuals is not poisonous, while blood serum is. On the contrary, the urine of healthy pregnant patients is toxic, its toxicity diminishing during labor and increasing during the puerperal period, and reaching its maximum on the third and fourth days of the puerperal state. When pregnancy is complicated by nephritis, the toxicity of the urine is increased. In eclampsia, the toxicity of the urine is diminished during labor, increases as soon as labor is over, but is never higher than that of the normal woman in the corresponding period of gestation.

The serum of healthy pregnant patients is in contrast to that of the non-pregnant toxic. During labor this toxicity grows less, but increases during the puerperal period, and reaches its maximum on the third day after labor. When pregnant patients suffer from nephritis, the toxicity of the blood serum is increased. In eclampsia the blood serum is toxic, as a rule before labor, if considerable edema has not developed. If, however, edema is markedly present the serum is little, if at all, toxic. When a patient has eclampsia after delivery the serum is ordinarily toxic only if edema is also present.

Colostrum is toxic to a slight extent, increasing gradually until the third day after delivery. In cases of nephritis, the breast milk is no more toxic than in the normal patient, and the same is true of cases of eclampsia. It cannot be proven that colostrum in eclamptic patients is especially toxic.

The fluid of edema in pregnant and puerperal women who have nephritis is distinctly toxic, while in cases of eclampsia, both before and after labor, it is not toxic. However, only in an eclamptic patient who is passing through parturition is the edema fluid found to be toxic. There is a curious reverse relationship between the toxicity of the fluid of edema and that of the blood. The toxin which is found in the urine, serum, and the milk in pregnancy cannot be classified as an antigen, nor has it anaphylactic properties. There is no agreement between

the results obtained by a biological investigation of urine, serum and milk, in eclamptic patients, and the clinical picture and clinical findings in eclampsia. The same clinical phenomena which are characteristic of anaphylaxis are observed in cases of hemorrhage into the pericardium.

In studying these questions upon the living animal, it is important that after the last experiment the animal be chloroformed as soon as possible and its body examined to rule out all erroneous conclusions.

**The Etiology of Eclampsia and Albuminuria.** Young<sup>1</sup> publishes an interesting paper, well illustrated by pictures of gross and microscopic sections, which is based upon the hypothesis that eclampsia and the albuminuria of pregnancy are due to the liberation of the products of early autolysis of the placenta.

In addition to postmortem studies, he investigated these diseased processes by experiments upon animals. For this purpose he used guinea-pigs, and prepared placental tissue by quickly drying small portions in an incubator, having first washed them freely in sterile water, and then, after drying, they were powdered with sterile mortar. If necessary, this could be strained through a fine wire sieve to remove the fibrous tissue. This powder, suspended in saline solution, can be injected subcutaneously.

To avoid the possibility of contamination, pieces of placenta about half an inch square, washed free from blood, were placed in glycerin and incubated in it. Several pieces were then put in a sterile mortar and pounded, with 10 c.c. saline solution. He also tried placing the placenta in saline solution, on the surface of which was a film of toluol. The weight of the saline to the placenta was two to one. If the whole is thoroughly shaken before being put in the incubator, enough of the toluol remains in solution to prevent bacterial growth.

The writer found that toxemias are especially associated with recent infarction of the placenta. When cases are severe and quickly produce labor, examination of the placenta with the unaided eye may find no evidence of disease. Should the placenta be retained for some time, the unaided vision may readily see evidences of necrosis when it is born. Evidently some time is required for the development of this necrosis.

This condition of placental infarction results from interference with the maternal blood supply of the part. There can be no question but that the chorionic elements are directly dependent on the maternal blood, and, so long as this is retained, can live in the absence of fetal blood.

This interference with the maternal placental circulation does not arise from a toxic state. If the placenta be examined in one of these cases, whenever there is definite evidence that a portion of the maternal

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, July, 1914.

blood supply is involved, there will invariably be found an area of disease corresponding exactly to the area of involvement. Unless the process be quite recent, it can be studied with the unaided vision. This is well illustrated in the study of accidental hemorrhage.

When a portion of the placenta dies, the products liberated from this part can pass directly into the blood stream. The placenta is remarkable in this respect. If toxemia is to develop, the blood must circulate around the poison-generating foci. When this is kept in mind, many of the difficulties associated with the study of complex cases of eclampsia are cleared up. For example, after the death of the fetus, or should the placenta become separated, the maternal symptoms cease. In accidental hemorrhage, when the placenta becomes completely detached—which number 50 per cent. of the whole—toxemia is absent. Those cases of accidental hemorrhage associated with toxemia are those in which a portion of the placenta remains attached for some time after a neighboring portion has been separated by retroplacental hemorrhage. It is the necrosis of this part which sets free the toxic materials. The toxic materials liberated are formed by the necrosis of this portion of the placenta.

In cases in which the placental disease develops gradually there is more chance for the evolution of the infarcted patches. In long-standing albuminuria this is illustrated by the fact that there is more visible alteration of the placenta than in many cases of acute eclampsia. Pregnancy is allowed to continue because the toxemia develops very gradually. If one searches for the cause of the toxemias, they find them best in autolytic products liberated in the early stages of placental death. From the healthy placenta it is possible to isolate a soluble substance or substances which reproduce the clinical features and morbid changes characteristic of eclampsia. The clinical features are also present, and there are both convulsions, necrosis of the liver, and degenerative changes in the convoluted tubules of the kidneys.

Young makes a practical deduction in urging that in all such cases, if there be a suspicion that a portion of placenta has been retained, the uterus be thoroughly explored and this portion removed. He believes that its presence may liberate fatal poisons.

**Experiments on the Etiology of Eclampsia.** Hull and Rohdenburg<sup>1</sup> have made experiments to determine the etiology of eclampsia. They assume that autolysis of tissue would produce substances resembling those formed by ferments in the blood. These autolysates were injected intravenously or subcutaneously into animals, using not only pregnant females, but males, and the non-pregnant.

They believe that pregnancy is peculiar because it is the only condition in which complex protein material is introduced into the general

<sup>1</sup> American Journal of Obstetrics, December, 1914.



circulation directly. Fermented active protein causes extensive degeneration of the liver, with slight change in the kidneys. Hemolytic protein boiled to destroy the enzymes produces, as a rule, slight lesions in the liver. It damages the kidney to a marked degree, producing severe albuminuria, with all sorts of casts in the urine. The animals die in convulsions and coma, reproducing the symptoms of eclampsia in the human subject.

Lucein produced by autolysis affects the liver markedly and in the rat attacks the kidneys.

The writers believe that eclampsia develops when an overload of fetal elements is thrown into the circulation and autolyzes, with the formation of an excessive lucein. This injures the hepatic vessels, with consequent thrombosis and necrosis, and more or less complete autolysis of the liver cells. The products of this autolysis attack the epithelia of the kidney.

It is remarkable, if one can judge from experiment, how great may be the damage to the liver before clinical symptoms appear. At variance with the view constantly received, the writers believe that the renal lesions are the ones most important in producing hemorrhages and convulsions. It is thought that it will be of diagnostic value to isolate negative protective ferments in a non-pregnant patient, and also to determine the lucein content of the blood. It is thought that the negative reaction, so often seen in eclampsia in man and animals, arises from the inhibition in the action of ferments by an excess of their own products.

**A Case of Double-sided Total Cortical Necrosis of the Kidneys in a Patient Suffering with Eclampsia.** Schüppel<sup>1</sup> reports the case of a patient, aged thirty-five years, brought to the clinic unconscious in the seventh month of pregnancy, with suppression of urine for forty-eight hours, but without convulsions. Just before death a very small quantity of urine was obtained by catheter.

At autopsy, the patient was found to be very fat, the heart muscle reddish gray in color, small hemorrhages in the lower portion of both pleuræ, the lungs slightly edematous, and the bronchial mucous membranes reddened and swollen. The spleen was small, soft, and its pulp a grayish red; the kidneys were very dense, and the capsule containing abundant fat was easily separated. In the upper portion of the kidney there was a spotted or blotched appearance, and, on cutting into the cortex, signs of extensive necrosis were found. The pyramids could be made out, although hemorrhage had evidently taken place. The zones of necrosis extended to the superficial portion, and this was divided from the remainder of the kidney by a thin, hemorrhagic zone. There were no thrombi nor clots, and no hemorrhage in the pelves of the

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ciii, Heft 2.

kidneys. The liver was somewhat small and fatty, contained but little blood, and showed cloudy swelling.

In the absence of a history, the interesting question arises: How long had this patient been ill? She was under observation in the hospital for two days, and but 10 c.c. of urine was secreted. The erythrocytes observed in the interlobular arteries were also probably four or five days old.

**Veratrone in the Treatment of Eclampsia.** Haultein<sup>1</sup> describes the case of a primipara seven months pregnant, with a blood pressure of 170, headache, blindness, swelling of the face and extremities, and with urine containing a very large percentage of albumin. One cubic centimeter of veratrone was injected at 10 P.M. and by the next morning the headache was gone and 20 ounces of urine had been excreted. The blood-pressure had dropped to 120; the pulse to 64.

Although the patient was put upon a milk diet, she became worse, and veratrone was again given, with the same result. This was continued for over two weeks without permanent benefit, when it was thought best to induce labor. The patient slowly recovered.

His second case was that of a multipara, seven and a half months advanced. The blood-pressure was 175, and the urine contained an abundance of albumin, with granular casts. Veratrone was given, but without effect, and labor was induced.

His third case was that of a multipara who had given birth to a still-born child; she had also suffered from convulsions. In the present pregnancy she had had severe nausea and headache, terminating in convulsions and unconsciousness. The urine was highly albuminous, and 1 c.c. of veratrone was given. This was followed by temporary improvement, when another convulsion occurred, and the veratrone was repeated. This produced an improvement for four or five days, when the symptoms again recurred, when veratrone was given, followed by a drop in blood-pressure and by profuse perspiration. As the blood-pressure continued to rise, labor was induced. A living child was born, and the patient gradually improved.

His fourth case was that of a primipara suffering from great swelling of the legs and feet; blood-pressure, 175; and well-marked albuminuria. After temporary improvement, the patient grew worse, and veratrone was again given. Labor finally came on, and the patient was delivered of living twins.

His fifth case, a multipara, was remarkable by the fact that, in spite of convulsions and high blood-pressure, but one dose of veratrone of 1 c.c. was apparently efficient in preventing the development of more convulsions.

**The Value of Rapid Delivery in Eclampsia.** This mooted question is discussed by Lichtenstein.<sup>2</sup> He quotes the best available statistics in

<sup>1</sup> British Medical Journal, September 26, 1914.

<sup>2</sup> Zentralblatt f. Gynäkologie, 1914, No. 5.

eclampsia as but 3.8 per cent. mortality. An especially favorable series of cases is that reported by Snyder in the *Archiv f. Gynäkologie*, 1910, Band xc. In this series of 34, the maternal mortality was 2.9 per cent. Among these were 15 spontaneous births, 12 by forceps, and 10 through extraction. These statistics are better than can be shown by those who urge immediate delivery, no matter by what method.

**Euphyllin to Increase Diuresis in Eclampsia.** Reifferscheid<sup>1</sup> reports 16 cases in which diuresis was promptly increased by the administration of euphyllin. The convulsions in these patients varied in severity and frequency, but all were well-marked eclamptics. There was one death. Bleeding was employed in those cases that were most severely ill.

In studying the effect of this substance, it is found that euphyllin does not cause such a great increase in the quantity of the water of the urine as in the salts. It is the prompt excretion of solid material which makes the remedy valuable.

In the *Zentralblatt f. Gynäkologie*, 1914, No. 23, Lichenstein reports good results from the intramuscular injection of euphyllin in treating eclamptic coma. Euphyllin was furnished in ampoules, suppositories, and tablets. Each ampoule contained 2 c.c., the tablet a decigram, and the suppository 36 centigrams. Three ampoules are usually given during a day, unless the condition of the patient demands more. Should the drug produce depression, digitalin should be given also. It is readily soluble in water and in many other fluids.

**Abdominal Cesarean Section in the Treatment of Eclampsia.** Peterson<sup>2</sup> contributes a paper in the discussion of the treatment of eclampsia in which he brings forward the merits of abdominal Cesarean section. The mortality of Cesarean section has become so low that it must now be considered as a method of treatment in many conditions. In eclampsia, he quotes a maternal mortality of 25 per cent. He believes that vaginal Cesarean section should be performed prior to the eighth month. Isolated groups of cases in his statistics show a maternal mortality of 9.5 per cent., and this must be taken as possibly the best which can be obtained from the operation.

The discussion of the treatment of eclampsia by immediate delivery, and the choice of that method of delivery, is always before us. During the past three years, the following points have become reasonably clear: Success or failure depends upon our success or failure in overcoming the toxemic condition present. This is always such an uncertain quantity that it is impossible to form a prognosis in a case of eclampsia. The best results are obtained by treating eclampsia promptly and vigorously; by bleeding, with intravenous saline transfusion, irrigation of the stomach and bowels, the introduction of calomel into the stomach, stimulating the action of the skin by warm sponging, or placing the

<sup>1</sup> *Zentralblatt f. Gynäkologie*, 1914, No. 30.

<sup>2</sup> *American Journal of Obstetrics*, April, 1914.



patient between blankets, and a copious supply of pure air. Narcotics should be used cautiously; anesthetics should be avoided. Depressing drugs should not be employed.

Within two hours after this treatment has been carried out, the patient will, or will not, show evidence of beginning labor. In multiparæ with soft cervix, if the membranes be ruptured, spontaneous delivery will frequently occur, followed by great improvement. Forceps or version can be used if needed. In primiparæ with undilated and resisting cervix, or in multiparæ in whom the cervix is difficult of dilatation because of scar tissue, delivery by section is indicated. Prior to the eighth month by vaginal section; after this time by abdominal section. After delivery, the patient's greatest danger is from edema of the lungs and pulmonary gangrene, and, with the hope of avoiding this, dry cupping, strychnia, digitalin and atropine, hypodermatically, are used; changes in posture, and an abundant supply of fresh air are indicated.

**The Treatment of Eclampsia in the Heidelberg Clinic.** Menge<sup>1</sup> gives the results in 65 cases of eclampsia treated in the Heidelberg Clinic. All of them were marked cases of albuminuria. The maternal mortality was 18.4 per cent., the fetal mortality 37.8 per cent.

Especially good results have been obtained by bleeding, followed by intravenous saline transfusion. When dilatation of the cervix was delayed, the patient was delivered by suprasymphyseal section.

**The Treatment of Eclampsia in Winter's Clinic in Königsberg.** Schiller<sup>2</sup> describes the treatment of eclampsia as formerly carried out, by chloroform narcosis, morphine, chloral, and hot packs, with the hope of inducing spontaneous labor or easy delivery. Forty-five cases treated in this way, without artificial delivery, gave 10 maternal deaths; 88 cases treated by artificial delivery, in which the conditions were favorable, gave a mortality of 20. The result of the 133 cases, with 30 deaths, was a mortality rate of 20.5 per cent. for the mothers.

Next was tried the use of dilating bag with combined version, and here a series of 25 cases gave a mortality of 24.1 per cent. Then came a period in which Bossi's dilator was extensively employed, but the use of this instrument increased the mortality to 37.5 per cent.

Vaginal Cesarean section had a mortality of 21.3 per cent. The clinic also used the purely expectant method of Stroganoff, and in some small series of cases the results were surprisingly good. Then in the following group of severe cases, the maternal mortality rose to 16.6 per cent. The value of bleeding, with intravenous saline transfusion, was proven beyond question.

In common with many other observers, Schiller believes, when cases of eclampsia must be treated at home by the general practitioner, that the Stroganoff expectant method will give probably the best results.

<sup>1</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xl, Heft 1.

<sup>2</sup> Ibid., Band xxxix, Heft 2.

Cases of eclampsia, however, should be taken as soon as possible to the hospital, where bleeding can promptly be done, and where the case can be terminated by operation should there be delay or unusual difficulty in the development of labor.

### THE PLACENTA.

**Accidental Separation of the Placenta Accompanied by Intraperitoneal Hemorrhage.** Clifford<sup>1</sup> reports an unusual case of a woman in her second pregnancy admitted to the hospital in shock. There was a very slight discharge of blood from the vagina, the urine was highly albuminous, and the patient was at term. The uterus was very tense and tender. There were no labor pains, but general abdominal pain. When the membranes ruptured, there was a discharge of amniotic liquid and dark blood.

As the patient did not improve with stimulation, the abdomen was opened and found to contain a large quantity of free blood, evidently coming from ruptured veins in the right broad ligament, caused by great distention of the uterus. The uterus contained a large quantity of blood, the placenta had completely separated, and the child was dead.

Supravaginal hysterectomy was performed, the patient rallied somewhat under stimulation, but died six hours after operation.

The interesting and unusual feature of the case was the abdominal hemorrhage, caused by the excessive distention of the uterus rupturing veins in the broad ligament.

**Placental Retention and Puerperal Infection.** Ahlfeld<sup>2</sup> criticises the statement of Winter that retained portions of placenta are not an important factor in causing puerperal septic infection. He quotes Morton's statement that, in 100 puerperal patients having fever, portions of placenta were found in 50; also Pief's statistics of 407 puerperal cases with complications, in 199 of whom there were retained placental fragments; Puppe, in 52 cases, found placental material in 25. In 100 well-defined cases of septic infection in the Munich Clinic, Simon found portions of retained placenta in 20.

Ahlfeld believes that the retention of portions of placenta prevents the permanent contraction of the uterus, and leaves the cavity of the uterus larger than it normally should be. This is accompanied by passive oozing and retained clots, which are excellent culture material for bacteria.

If one examines such a uterus, he will find, at the site of the placenta, granulation tissue rich in bloodvessels containing bacteria.

To detect defects in the placenta, Ahlfeld calls attention to Küstner's method of examination by injecting milk through the umbilical vein

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, January, 1914.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 5.

after the placenta and cord have been removed from the uterus. If the placenta is intact, the milk remains within its substance; but if not, it can be plainly seen to emerge where the placenta has been torn. When the membrane is torn away from the border of the placenta, this should occasion a suspicion that some placental tissue remains. Occasionally there is a defect on the broad surface of the placenta which does not extend to the border or to the amniotic portion. Cases of placenta previa, and those in which the placenta is removed manually, furnish the greatest number of cases of retention. Even although there be no fever and no sign of infection when placental tissue is retained, it should be carefully removed, if possible, by the gloved hand. When there is fever and altered discharge, the retained material should be removed as soon as possible. When the cervix remains dilated, so that the index finger can readily gain access, and when there is no evidence of infection in the tissues about the uterus, the finger is the safest instrument for removing the retained material. In some cases a very gentle irrigation of the womb is of service, and those are the most unfavorable cases in which an attempt to remove the material is accompanied by severe bleeding. One must remember that it is never possible, in the beginning of fever having its cause in the genital tract, to foretell whether the infection will be a mild or a severe one. Bacteriological examination does not clear up the prognosis.

**The Treatment of Retained Placental Fragments.** Hoehne<sup>1</sup> refers to Winter's paper—to which Ahlfeld also referred—and publishes the results of the practice of the clinic at Kiel during a period of seventeen years.

There were 29 cases in which patients were at term or nearly so, and in which considerable placental material was retained; 14 of these confinements occurred in the clinic and 15 had already been confined before admission to the clinic. There were 6 cases in which it was at once observed that the placenta had not been completely discharged, and in these the retained portions were removed as soon as possible; 4 of these patients had a puerperal period without fever; 1 had high temperature with parametritis; 1 had a mild infection complicated by disease of the heart. In all 6 patients the removal of the retained placental fragments was followed by distinct improvement, and ultimately by recovery to normal conditions.

In contrast to these, is a series of 8 cases confined in the clinic, in which no interference was practiced. In one of these the retained portion was spontaneously expelled without fever, and with but trifling loss of blood. One had fever, which subsided after the placental tissue had come away. In three cases the temperature was at first normal, and then, when a large clot was expelled containing retained placental tissue,

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 49.



fever occurred, which disappeared in a few days. In the five remaining cases there was considerable hemorrhage, sometimes sudden, the uterus remaining large and soft. Four of these cases had no fever, although internal manipulation had been practiced during delivery. One case had high fever, with profuse hemorrhage, eighteen days after delivery, with chills and prostration. The day after the placental fragments were removed, the temperature fell to normal and so remained. Of the eight cases confined in the clinic in which retention of the placental tissue was not at first diagnosticated, five had no fever before or after the exploration of the uterus. The other three had a mild puerperal infection.

Of the 15 cases delivered outside the clinic, there were 8 without fever, and 7 had fever on admission. The 8 without fever were treated by exploring the uterus and removing retained material, because hemorrhage was present. Apparently the treatment resulted in prompt cessation of the hemorrhage without the development of infection.

The 7 patients admitted with retained placental tissue, and having fever, were also treated by exploring the uterus. In 2, very marked chills developed; 1 had thrombosis of the left femoral vein; 1 was profoundly anemic, having had a twin birth, ended by manual removal of the placenta, and with hemorrhage. This patient finally recovered. In one patient the attending physician had, at the patient's house on the thirteenth day after spontaneous labor, removed portions of placental tissue because of profuse hemorrhage. This patient's uterus was explored in the clinic, and infarction of the lung developed, from which the patient gradually recovered. Two of these patients with retained placenta, and admitted with fever, died. In one, the attending physician, at the patient's home, had removed foul portions of placental tissue and had curetted the uterus on the ninth day of the puerperal period. This was followed by marked chills and the development of pyemia. This patient died of pyemia eighteen days after delivery, and autopsy showed purulent endometritis, thrombosis, and multiple lung abscess. Streptococci and staphylococci were present.

The other fatal case was that of a multipara attended by a midwife, in whom fever developed on the third day after birth. There was hemorrhage and a dilated cervix. The uterus was immediately explored and placental fragments removed. The patient developed pneumonia in the left inferior lobe and the right upper lobe, with pleurisy.

When the series of 29 cases was examined, it was observed that when labor was conducted in a hospital, the retention of portions of placenta occasioned no serious complication. Of those admitted to the clinic previously confined, but having no fever, the removal of the retained placental portion did not complicate the patient's recovery. It was among those already having fever on admission that 2 fatal cases developed. In 23 cases the placental material was retained for some time

and, of these, 11 had no fever, 9 had moderately high fever, and 3 had severe infection, with 2 deaths.

While it is true that severe puerperal infection cannot always be directly traced to the retention of placental material, it is evident that such should be removed in all cases.

**Placenta Previa.** THE HEART SOUNDS IN PLACENTA PREVIA. Baughman<sup>1</sup> contributes a paper on the heart sounds in placenta previa. He finds them most available at the point on the abdomen of the patient nearest the middle of the back or chest of the fetus. This point must be made out by very careful palpation. If the heart sounds are followed during a case of placenta previa, the action of the fetal heart is often disturbed before the mother shows signs of a serious condition. When this can be detected, the labor should be terminated immediately.

THE TREATMENT OF PLACENTA PREVIA. Naegel,<sup>2</sup> of Berlin, contributes a paper on the discussion of placenta previa in the Seventeenth International Congress of Medicine, London, 1913.

He personally reports 50 cases—4 primiparæ, 46 multiparæ. Labor set in at full term in 26, and prematurely in 24. There were 2 cases of marginal placenta previa, 28 of lateral, and 20 of central. The head presented in 36, 9 had transverse position, four times the foot presented, and once the breech. In 38, combined version was performed, and internal version in 4; in 5 cases of pelvic presentation the foot was brought down, and in 3 cases of vertex presentation the membranes were ruptured, followed by the descent of the head. Extraction was practiced in but 3 cases of internal, and 7 of external version.

The third stage of labor was normally completed in 44 patients; in 8, there was atony of the uterus, requiring massage; in 6, profuse hemorrhage made necessary the manual removal of the placenta; in 48 patients, the puerperal period was normal in 40; in 8, there was a rise of temperature, with foul-smelling discharge. All of these patients recovered.

Sixteen of the children were born alive, 35 stillborn, there being twins. Of the 35 stillborn children, 23 were premature.

The method of treatment consisted in performing bipolar version as early as possible, bringing down a foot, placing a loop about it, and leaving the case for spontaneous expulsion. When the placenta was central, it was perforated by the fingers, and either foot brought down. No attempt should be made at extraction.

Two deaths occurred from acute anemia in the early history of the series.

Davis<sup>3</sup> publishes a paper read before the American Medical Association, Section of Obstetrics, on "The Treatment of Placenta Previa."

<sup>1</sup> American Journal of Obstetrics, February, 1915.

<sup>2</sup> Surgery, Gynecology and Obstetrics, July, 1914.

<sup>3</sup> Journal of American Medical Association, July 25, 1914.

He calls attention to the significance of hemorrhage in pregnant women, and also to the fact that infection by vaginal examinations or manipulations is very apt to occur in these cases. For the general practitioner, in the house of the patient, combined version, with the bringing down of the leg of the fetus, and its subsequent spontaneous expulsion, is the safest procedure.

In the hospital he had employed abdominal Cesarean section in 17 cases, with the recovery of all the mothers and 60 per cent. of the children. Many of these women were exsanguinated upon admission.

Since writing this paper, the reviewer has added 6 cases of abdominal Cesarean section for placenta previa to the 17 reported. There has been no maternal death, and those children in good condition have survived. Several operations of this sort have been performed by other members of the staff of the Maternity Department of the Jefferson Hospital, with the recovery of all the mothers.

In dealing with cases in the houses of the poor, the patient is brought to the hospital on the occurrence of the first hemorrhage, or as soon as vaginal examination detects placenta previa. Section is done as soon as possible, and no vaginal manipulation or examination is made.

After the emptying of the uterus, the uterine cavity is thoroughly irrigated with hot sterile salt solution and packed with 10 per cent. iodoform gauze. The uterus is then closed in the usual manner, the end of the gauze brought down to the cervix through the vagina, and the vagina thoroughly cleansed and packed with bichloride gauze. This is removed in from forty-eight to sixty hours after the operation. In his experience, hemorrhage ceases promptly with the removal of the placenta.

THE DANGER OF THE TAMPON IN PLACENTA PREVIA. Reinhardt<sup>1</sup> gives the results obtained in the treatment of 276 cases of placenta previa, among whom the tampon was employed in 115. The morbidity of the entire series was 42 per cent., the mortality 2.2 per cent.

When one compares the puerperal period of those treated by the tampon, and those without, 47 per cent. of those tamponed had no fever; of those not tamponed 66 per cent. were free from fever; 5 of those tamponed died of puerperal septic infection—a mortality of 4.3 per cent. In those not tamponed, the mortality was 0.7 of 1 per cent.

Of the 6 cases dying of puerperal sepsis in the entire series, 5 were admitted to the clinic who had already been tamponed.

Reinhardt would not use the tampon at all, but, in cases in which hemorrhage developed, he would abstain from all vaginal examination and manipulation, making the examination externally and through the rectum. These patients should be brought to the hospital for treatment as soon as possible, and before transporation a hypodermatic injection

<sup>1</sup> Zentralblatt f. Gynäkologie, 1915, No. 4.



of morphine should be given. If the tampon is to be used at all, it should be employed under the most strict antiseptic precautions and with the speculum, to prevent the contamination of the gauze. The strip employed should be at least five meters long, sterilized in water, or potassium permanganate solution. A moist tampon often controls hemorrhage better than a dry one. An abundant external dressing and pressure should be used.

**HYSTEROTOMY FOR CENTRAL PLACENTA PREVIA.** Fekete<sup>1</sup> reports the case of a multipara at term who had had severe hemorrhages for several days without labor pains. The placenta was central, the patient was given hypodermoclysis and stimulants, and the bleeding ceased for twenty-four hours, the vagina having been tamponed for thirty-six hours. When the pains began, profuse hemorrhage occurred. The child was delivered by section, and the uterus removed. The patient made a good recovery.

### LABOR.

**Can Labor be Conducted by External Examination Only?** Hoehne<sup>2</sup> draws attention to Unterberger's experience in 300 cases of labor in which he made a correct diagnosis of the degree of dilatation present in 95 per cent. He based his diagnosis upon the detection of the contraction ring four fingers' breadth above the symphysis, and believes that, upon observing this, one can diagnosticate the degree of dilatation.

There can be no question concerning the danger of vaginal examinations improperly conducted. The most striking example of this is given by the writer in the case of a young primipara whose husband had facial erysipelas. The midwife called to attend the woman did not even remove the patient from her husband's room, but in this room made a thorough vaginal examination, followed by a speedy spontaneous labor. The patient died soon after of virulent septic peritonitis.

The writer also calls attention to the fact that a correct diagnosis can be made by palpation in complicated transverse position with shoulder presentation. He would limit vaginal examinations as much as possible, and then only under the strictest precautions.

**Pituglandol in the Management of Labor.** Sachs<sup>3</sup> reports the use of pituglandol in Winter's clinic in Königsburg. This remedy was employed by injecting subcutaneously or into the muscle substance. In some cases, 0.5 c.cm. was given very slowly in intravenous injection. If the injection was made too rapidly, the patient complained of giddiness, headache, vomiting and irritation for a few moments. The effect followed in ten to twenty minutes; sometimes more rapidly after intravenous injection, and a marked increase in blood-pressure was observed.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 22.

<sup>2</sup> Ibid., No. 14.

<sup>3</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 5.

This followed in two minutes after intravenous injection, and reached the height of 40 to 50 mm. of mercury. This also subsided rapidly.

It is questionable whether this alteration in blood-pressure was caused by the remedy or by the irritation of the injection. Care must be taken not to increase tension too much in patients whose kidneys are involved, and in these cases it may be well to bleed the patient before using the remedy.

Two hundred and eighty-nine cases were treated, 117 during the stage of dilatation, 139 during the period of expulsion, and 33 in the third stage of labor; 228 of these labors were at full term. Among these, there were 179 injections given subcutaneously, and 49 given intravenously.

Of the whole number, the remedy seemed to do good in 59 per cent. It increased the vigor of uterine contractions somewhat in 17 per cent., and did no good, or seemed to do harm, in 7 per cent. The remedy was most successful in multiparæ. The original dose was repeated in one hour, if necessary, and in some cases as many as twenty doses were given to one patient. Ordinarily, the subcutaneous method is quite sufficient. It usually produced vigorous contraction after the removal of the placenta.

Care must be taken that dilatation is complete, the child proportionate to the mother's pelvis, the presentation and position favorable, and all the circumstances favorable for quick and spontaneous expulsion. When there is unusual rigidity or deformity of the soft parts, or when the child already shows signs of exhaustion and danger, it should not be employed.

**Painless Labor.** Hellman<sup>1</sup> calls attention to the virtue of *tocanalgin* *obstétrique*. This was described in July, 1914, by Dessaignes before the French Academy of Medicine.

It is obtained by the action of living ferments resembling those of beer on chlorhydrate of morphine. This is a special method of fermenting opium, so that its toxicity becomes one-fifteenth that of morphine, while the entire morphine is transformed in a substance which crystallizes in the regular way. It is a hydration product of morphine without its characteristics. It makes the organism more susceptible to strychnine and digitalin. Both the vasomotor and the general reflexes are exaggerated, and the salivary, intestinal and renal secretions are increased. The action of the drug is prompt, and the sensation of pain disappears in from ten to twenty minutes.

In 84 cases there was complete analgesia; in 24, marked but not complete; while 4 patients said they had no relief, but nevertheless became more quiet. The duration of the analgesia was from thirty minutes to twelve hours.

<sup>1</sup> American Journal of Obstetrics, February, 1915.

Sixty-three patients had but one injection; 39 complained of pain at the end of five hours; 9 received three injections, and one case five injections.

As tested by the hysterograph, there was no effect on uterine contractions. On the average, the placenta came away in thirty-two minutes after the birth of the child. The patient's mental and general condition seemed to be practically undisturbed by labor. Involution was normal, and nursing proceeded favorably. Additional anesthesia was not required.

Of 115 children, 77 cried at once, 28 were dazed and apneic but breathed after a few moments, and very much resembled infants delivered by Cesarean section. There was one fetal death during labor in a case in which the fetus was doing poorly when the mother was admitted. Two infants had convulsions shortly after birth, and died, the autopsy showing meningeal hemorrhage. Three premature children died.

The drug is given hypodermatically 1.5 c.c. for the first dose, and 0.5 for succeeding doses.

Pinard has tried the remedy at the Baudelocque clinic with good results. Hellman reported three cases in which the drug relieved the pain of labor, lengthened the second stage somewhat, and had no effect upon the puerperal period.

**Delay in Labor through Distention and Rupture of the Fetal Urinary Bladder.** Böhi<sup>1</sup> reports the case of a primipara who, during pregnancy, had had vaginal hemorrhage on several occasions. Labor pains were considerably delayed, but, upon vaginal examination, the impression was given of possible polyhydramnios. As the membranes did not rupture, and dilatation was complete, it was thought best to rupture them, when the finger detected an elastic tumor, whose exact nature could not be made out. It was thought to be hydrocephalus. Accordingly, a trocar was introduced and a considerable quantity of faintly-yellowish fluid escaped. The sac of the tumor presented. There was some cardiac pulsation in the fetal body lasting but a few moments. The patient made a good recovery from labor, and no evidences of syphilis in mother or fetus were discovered.

Upon examination, it was found that the tumor consisted of an enormously distended, fetal urinary bladder. The abdominal wall had been deficient in development, and the fetus was practically a monstrosity.

**Labor after Operative Antefixation.** Küstner<sup>2</sup> reports the case of a patient, aged forty years, who, five years previously, had anterior and posterior colporrhaphy and vaginal fixation of the uterus. Before these operations she had four labors and two abortions. After the

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ci, Heft 3.

<sup>2</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xxxix, Heft 2.



operations she became pregnant and went to term, when pains came on, attended by the escape of blood-tinged, amniotic liquid, and the movements of the child could not be detected.

When admitted to the hospital, the abdomen was greatly swollen, the tissues about the symphysis edematous, and the highest point of the uterus a hand's breadth beneath the tip of the sternum. The abdominal tumor was greater in breadth than in length, and fetal heart sounds were absent. The pains occasioned great suffering, and there was a tetanic condition of the uterus, for which morphine was given hypodermatically.

Upon internal examination, the os was about one-third dilated and was so high in the pelvis that it was reached with great difficulty. The posterior lip of the cervix was a considerable distance above the promontory, swollen and soft. The anterior lip was tense and thin, and did not yield to pressure. The condition of the tissues was such that the elongated vagina and anterior lip of the uterus extended across the small pelvis, while the opening of the uterus was practically in the region of the lumbar vertebra. The head of the child was lowermost, and, as the child was dead, efforts were made to extract it by craniotomy instruments, which failed. A foot was then brought down and by traction was brought so low that it could be seen in the vulva. The patient was allowed to go on in labor, and gradually the birth of the child occurred without especial hemorrhage. The patient, however, was in collapse, pale, with a small, weak and rapid pulse and with cold sweats. The respirations speedily became 72 to the minute. The placenta was readily removed by the hands, but the condition of the patient grew worse and she died two hours after labor.

The child was macerated, had been large, and must have been dead for some time.

Autopsy showed air in the right heart, fatty liver, and dilatation of the pelves of the kidneys.

As regards the pelvic organs, in the prevesical space and in the left parametrium there was bloody fluid, and the tissues were edematous. The peritoneal sac had not been opened, and, on incising the uterus, the anterior wall of the uterus was found excessively thin, infiltrated with blood, its muscular wall being especially deficient in development. The site of the fixation could be made out, and, by reason of this, the fetus had developed by excessively distending the anterior wall and practically occupying a transverse position in the womb. The death of the child had occurred from long-continued pressure, and that of the mother followed from exhaustion and air embolism.

In the Breslau Clinic, the writer had observed 5 cases of labor in patients who had fixation of the uterus. In one, the child died and the head remained high in the pelvis, and craniotomy was performed. In another case it was necessary to dilate by the use of a bag, when the

child was spontaneously expelled; the third patient was treated by Cesarean section; a fourth, by dilatation with a bag, followed by version and extraction of a living child, the child being in transverse position; the fifth case was also terminated by version and extraction because of the position of the child and the prolapse of the cord. There was difficulty in extracting the after-coming head.

The writer is inclined to believe, on account of the edematous condition of the tissues in the prevesical space, that practically rupture of the uterus had occurred at this point and that this was one of the conditions, with the air embolism, which brought about the death of the patient.

Vaginal fixation of the uterus, the reviewer believes, should never be performed in women during the child-bearing period of life. The shortening of the round ligaments is far preferable, and, with proper repair of the cervix, pelvic floor and perineum, will give good results. In older patients, hysterectomy would be safer, and often gives greater comfort to the patient. It is impossible for the uterus to develop normally during a pregnancy following vaginal fixation, and, even in the non-pregnant patient, considerable pain often follows the operation.

**Labor and Dystocia in Wild Animals.** Schumann<sup>1</sup> contributes an interesting paper based upon observations at the Zoölogical Garden in Philadelphia. He illustrates the pelvis in different animals, and also various unusual presentations and positions.

In studying dystocia, uterine inertia was found as in the human subject. In these cases, labor was slow and indefinite, and, unless the fetus be delivered by artificial means, death and decomposition of the fetus, and peritonitis in the mother, may develop. This condition is not uncommon among domestic animals.

Cases of excessive power in the expulsive forces of labor are sometimes seen in wild animals, producing precipitate labor, and should this occur before full term, when the fetus has not assumed a favorable position for birth, the result may be rupture of the uterus. There may also be excess in the resisting forces of the birth canal, as in deformity of the pelvis from imperfect development, which is much more common in the human subject than in animals. Contracted pelvis in animals is the result of disease of the osseous system. The generally contracted pelvis occurs in animals, but usually where dystocia results it is because the male and female vary greatly in size. The juvenile pelvis is also seen and may delay labor; so the oblique pelvis and the bridged pelvis with a bony septum just above the symphysis, have been observed. Deformities due to imperfect union following a fracture with excessive callus, sometimes delay labor.

A case is reported in which an ape came into labor, without progress,

<sup>1</sup> American Journal of Obstetrics, April, 1914.

and efforts were made to deliver by version, the animal dying during operation. At autopsy, it was found that the pelvis was considerably contracted, greatly narrowed, and with the sacrum bent strongly forward.

There may also be obstacles to birth in spasmodic contraction of the cervix, rigid cervix, atresia of the vagina and septa of various sorts; so too, tumors of the genital tract in all the varieties seen in the human being may occur in the lower animals.

Displacements of the uterus are uncommon in animals because of the horizontal position of the trunk. This produces a marked anteversion. Torsion of the uterus is not infrequent, the twist usually taking place at the junction of the fixed vaginal portion with the movable abdominal part.

In the mechanism of labor, abnormal presentations occur with considerable regularity. Postpartum hemorrhage is rarely severe and is usually produced by lacerations. Among the higher apes having a placenta like the human, there may be true postpartum hemorrhage from the placental site. Placenta previa has never been accurately observed, but, in monkeys, premature detachment of the placenta, with death from concealed hemorrhage, occasionally occurs. Rupture of the uterus is followed by hemorrhage, although septic peritonitis is the usual cause of death. Lacerated wounds of the cervix are common among animals having young with sharp hoofs. The usual site of the rupture is the anterior portion of the cervix, where profuse hemorrhage may occur. Rupture of the vagina may result from mechanical violence and also from constitutional disease with a generally bad condition of the tissues. Thus a camel dying in labor was found to have hydatid disease of the liver, lungs and spleen.

Inversion of the uterus follows from the same predisposing causes as in the human subject, the immediate cause among animals being aspiration of the uterus by the fetus in long, severe labor. The membranes having ruptured some time previously, the uterus may be inverted by the fetus, much as the finger of a tightly fitting glove may become inverted when the finger is withdrawn.

The case of a mouse dying of shock in labor from inversion of the uterus is described and illustrated.

**Labor Influenced by Kyphoscoliosis.** Vogt<sup>1</sup> has observed several of these cases in the clinic at Dresden, and finds, in cases of highly rachitic kyphoscoliosis in which the deformity is in the dorsal region, that menstruation is usually less. These patients often suffer from abortion and premature labor. Signs of deficient vigor in the action of the heart very often develop during the second half of the pregnancy, or just before labor. Thus, death may occur from acute heart failure

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band cii, Heft 1.



during the first stage of labor. But should the patient survive this period, she may die later in the puerperal state by dilatation of the heart and some pulmonary lesion as a complication. When the cardiac action is notably bad during pregnancy, gestation must be interrupted by vaginal or abdominal section. One must avoid delaying this procedure too long. Many of the children of these mothers are born living and there is a tendency to excessive hemorrhage during the period of placental separation.

The reviewer has just had in his care, in the Maternity Department of the Jefferson Hospital, a dwarf with a pronounced deformity of this type. The pelvis was almost normal, as the deformity was above the pelvic region and did not especially interfere with its development. The patient went some time over term, had inefficient uterine contractions, with rapid pulse, and was delivered by forceps, the occiput rotating posteriorly. Although she did not lose much blood, nor was there severe laceration, she passed into severe shock and rallied slowly under stimulation. She was able to partly nurse her child, but had a tendency to bronchial catarrh and rapid heart action during her convalescence.

**Rapid Labor in Diseases of the Spinal Cord.** Zimmermann<sup>1</sup> describes the case of a patient who had had two normal labors, and who was taken suddenly ill during pregnancy and brought to the hospital.

Upon examination, the pelvis was a simple flat pelvis without great contraction. Upon examining the nervous system of the patient, paresis of the lower extremities was observed, with spastic paralysis also of the upper extremities and the regions of the shoulders. The reflexes were altered and there were various other reflexes and reactions which were found abnormal. The Wassermann reaction was negative. When the patient came into labor, the head stood transversely across the pelvic brim, and when the membranes ruptured pituitrin was given hypodermatically, and the patient placed in Walcher's position.

The writer's explanation of the rapid course of labor lies in the fact that, by the paresis present, certain reflexes are shut off from the cord, and hence the inhibition of suffering is absent. The uterine muscle acts as if the uterus had been removed from the body and kept in warm saline solution.

The reviewer has observed the insensibility to pain and to uterine irritation seen among the insane. On one occasion in the wards of the Philadelphia General Hospital, he endeavored to induce labor upon a paretic dement, and introduced bougies within the uterus continuously for six days. There was no uterine action, nor was there appreciable softening of the cervix. The attempt was abandoned, and the uterus was emptied by operation.

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band cii, Heft 3.

**The Influence of Douching with Antiseptics upon the Condition of the Birth Canal at Labor.** Zweifel<sup>1</sup> has found by experiment that vaginal douching just before labor with oxycyanate of mercury, bichloride of mercury, lysoform, and potassium permanganate solution, produces a temporary diminution in the bacteria of the genital tract which lasts but a short time. While the number of cocci may be lessened, the spores resist this form of treatment successfully. This corresponds with Zangemeister's endeavors to disinfect the vagina by lysoform solution, employed for a period of three days. But little, if any, permanent result follows. A 2 per cent. solution of silver nitrate was more efficient. Painting the walls of the vagina with iodine in solution, and using alcohol upon tampons, lessened the number of bacteria; but the number of cases in which this method was employed was too small to furnish definite results.

When patients can bear the treatment, a 5 per cent. iodine solution may be used through a speculum without causing much suffering. When injections were made of distilled water, boric acid solution, or solution of acetic acid, the treatment seemed to do more harm than good. The bacteria increased rather than diminished. When tampons were employed, bacteriological examination showed very little result.

Schweitzer tried the use of lactic acid for periods of ten days. This seemed fairly satisfactory in some cases.

Zangemeister, Esch and Schröder, had fairly good success by first thoroughly irrigating the vagina with salt solution, and then using from 1 to 200 c.c. of bichloride of mercury 1 to 2000.

The conclusion is reached that in healthy patients these efforts are entirely useless, and that the most sensible procedure, when there is excessive secretion, consists in the employment of lactic acid.

The writer employed lactic acid in 15 cases, and in none of them was there fever during the puerperal period.

**Labor Complicated by Intussusception through a Gastro-enterostomy Wound.** Williamson<sup>2</sup> reports the case of a patient admitted to St. Bartholomew's Hospital in the thirty-fourth week of her second pregnancy. She had previously had two abdominal operations, one of them a gastro-enterostomy. After this, she was delivered spontaneously of a healthy child.

In her second pregnancy—the present one—she had attacks of severe vomiting. When she came to hospital the fundus was midway between the umbilicus and the sternum. The child's position was normal, the urine contained a trace of albumin, and considerable acetone and diacetic acid. The vomiting continued and the patient expelled a stillborn child. Two hours after the birth of the child, the stomach was

<sup>1</sup> Monatschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 4.

<sup>2</sup> Journal of Obstetrics and Gynecology of the British Empire, June, 1914.

greatly distended and a loud succussion splash was heard. The patient seemed extremely ill.

Upon washing out the stomach, a pint of dark-stained, bloody fluid, and gas, was obtained. The patient died thirty-six hours later, and, upon autopsy, the stomach was greatly dilated and distended, and evidence of inflammation was found in the stomach and intestines and in the region of the gastro-enterostomy wound. Upon opening the stomach, a large tract of intussuscepted intestine was present in the stomach. The bowel mass was 15 inches long, and gangrenous, and consisted of the upper portion of the jejunum. This accident had caused dilatation of the stomach, and the patient's death.

**Labor Complicated by Volvulus of the Cecum.** In the *Journal of Obstetrics and Gynecology of the British Empire*, June, 1914, White reported the case of a patient in her second pregnancy who had previously had an abscess of the appendix drained, with a resisting scar, which was weak and permanent.

When pregnant several months, the patient took castor oil for constipation. Severe abdominal pain followed. For this she had medical treatment, and some time later was delivered of a dead, seven months' child. She speedily went into severe shock, and when White saw her the abdomen was distended and tense, and there was a large hernia of the appendectomy scar, which could not be reduced. There was also an indefinite mass in the right lumbar region.

The patient was immediately removed to hospital, and the abdomen opened in the old scar. The sac contained an offensive fluid, and the cecum, which was gangrenous. There was a volvulus of the cecum and three inches of the ascending colon. The cecum, a few inches of the colon, and ten inches of ileum, were removed and drainage tubes inserted. The patient died a few days after the operation. An autopsy could not be obtained.

**Changes in the Blood during Labor.** Terhola<sup>1</sup> finds that, during labor, the number of red blood cells remains as great as before labor, and rarely shows diminution. The percentage of hemoglobin is also not materially affected. In about half the cases so seen, as the birth of the child occurred, there was a diminution in red blood cells, and in the percentage of hemoglobin, although in the cells themselves but little alteration is observed. After this, in the greater number of patients, there was a tendency for the red blood cells to increase, so that in from four to eleven days after labor the red cells are as numerous, or more numerous, than before parturition began.

**Rubber Mittens in the Management of Labor.** Meyer<sup>2</sup> describes a rubber mitten with a thumb which he has employed in the conduct of labor. He believes that such can be made thicker than rubber gloves

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ciü, Heft 1.

<sup>2</sup> Zentralblatt f. Gynäkologie, 1914, No. 34



and are less likely to tear and break. A hole in the mitten is more easily detected than in a glove. It can be more readily slipped upon the hand without danger of tearing, and the grasp of the hand is more secure in the mitten than in the glove.

**The Mechanism of Labor in a Case Complicated by Dislocation of the Femur, Lessening the Pelvic Space.** Meyer<sup>1</sup> reports an interesting case which he illustrates, in which the right femur had been dislocated and pushed through the side of the pelvis in such a manner as to encroach upon the pelvic space. The head engaged with the smaller fontanelle on the right side of the mother's pelvis and in front, while in the region of the larger fontanelle the head was pressed against the head of the femur, projecting into the pelvic space. As labor proceeded, the smaller fontanelle rotated posteriorly and delivery was effected by the deep descent of the forehead and the gradual passage out of the head in that manner. The position and presentation were practically those of a brow.

**Labor Complicated by Rupture of the Symphysis Pubis.** Schäfer<sup>2</sup> reports the case of a multipara who had had syphilis early in her married life, and who complained of sleeplessness and severe pain in the abdomen. There was no diminution in power on walking. The membranes ruptured soon after labor began, and the patient had strong pains without causing the descent of the head. As labor was delayed, the midwife summoned a physician.

Upon examining the patient, he found that movements of the child had ceased, and heart sounds could not be heard. The lower segment of the uterus became distended, the cervix was completely dilated, and the head in brow presentation. Craniotomy was performed, and delivery of the shoulders was difficult because of the large development of the child. The child was 60 cm. long and well developed; no evidence of rupture of the symphysis was observed.

On the second day, the patient complained of violent pain in the symphysis and the sacral region, and upon moving. It was found that the two halves of the symphysis had separated considerably. On the sixth day, putrid endometritis occurred, followed by pyemia. There was resistance in the region of the symphysis, and, on puncture, there was a yellow, serous fluid containing streptococci, diplococci, and spores. The blood, at the time of the chill, was sterile.

An x-ray picture showed a perceptible separation of the two halves of the pelvis 3 cm. in width. The left sacro-iliac joint was considerably separated. A little later an incision over the pubic region evacuated very foul-smelling pus. The patient was treated by drainage, the temperature fell, and on the eighteenth day she was able to get out of bed. She then could walk without difficulty. The symphysis gradually united, with moderate callus, which the x-ray showed to be from 6 to 8 mm. wide. The sacro-iliac joints were not permanently affected.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 43.

<sup>2</sup> Ibid.

**Labor in Contracted Pelvis.** Nebesky<sup>1</sup> gives the results of the management of labor in contracted pelvis in Ehrendorfer's Clinic in Innspruch.

The material for observation consisted of 15,998 patients, among whom there were 1673 contracted pelvises—10.5 per cent. Nebesky reports his cases in detail, with the various methods of treatment employed, and summarizes the experience of the clinic by stating that, in full term labors or in premature labors, the obstetrician must make an effort to bring about parturition with the fetus in head presentation. If the size of the pelvis is sufficient to permit the birth of a full-term child, the life of the child is much safer when the head presents.

The fetal mortality of breech delivery in contracted pelvis, whether spontaneous or brought about through version, is ten times as great as the mortality of labor with head presentation. Prophylactic version, which at one time enjoyed great popularity, has practically been abandoned, and in the presence of transverse position an effort should be made to bring the head to present, and when prolapse of the cord presents the obstetrician should use every effort to replace it.

When the patient is a primipara and the pelvic contraction of moderate degree only, it is well to wait for a trial of labor. If, however, the history of former labors is that of great difficulty, or if the measurement of the pelvis shows that the pelvis is much smaller than the child, then it is not wise to wait for spontaneous labor, but delivery should be effected by Cesarean section. This should be done as promptly as possible before the case has become infected. There is absolutely no objection to operating before pains have developed, and the transperitoneal cervical operation is highly commended. When the case is not a strictly clean one, one should not insist upon the Cesarean operation, but possibly sacrifice the child in the interests of the mother. A careful trial with high forceps may rescue the child occasionally from craniotomy.

When permission cannot be obtained to perform Cesarean section, the induction of labor may be allowed. A child weighing 2000 to 2500 grammes may be born spontaneously and may survive, so that one must consider the induction of labor as a logical procedure. In the interests of the fetus, the obstetrician must use every effort to have the premature labor terminated spontaneously. Other interference during premature labor exposes the mother to added risk and infection.

It is important to secure the presentation of the head, if possible, in these cases, as the chance for the child is much better.

It is interesting to note the results obtained for mothers and children. Of 1656 mothers, 5 died; 2 of septic infection, 1 of pneumonia following tracheotomy for rapid swelling of the thyroid gland; 1 from apoplexy; 1 from syphilitic infection and degeneration of the heart.

<sup>1</sup> Archiv f. Gynäkologie, 1914, Band ciii, Heft 3.

This makes the maternal mortality 0.3 of 1 per cent., the clinical mortality 0.06 per cent.; for the children, the general mortality was 13.43 per cent.

If cases born spontaneously be taken, the fetal mortality was 6.3 per cent., while in cases in which labor was terminated by some operative interference, the mortality was 38.6 per cent.

**Scopolamine-narcophin (morphine) in Labor.** Krönig<sup>1</sup> describes his experience at Freiburg with scopolamine-narcophin to mitigate the suffering of labor.

Patients receiving this treatment must be placed in private rooms and attended by special nurses, while a positive rule of the clinic is made to the effect that relatives of the patient are not admitted to her room.

The average dose was  $\frac{1}{150}$  of scopolamine-bromide with  $\frac{1}{2}$  grain of narcophin; the latter is a proprietary preparation of narcotin-morphine meconate.

The second dose was that of scopolamine alone. Half an hour after the second dose the patient was asked whether she remembered the giving of the first dose, or whether she remembered to have seen some object in the room. The effect of the drug is obtained when the patient ceases to remember.

In 3000 cases, no dangerous symptoms to the mother developed. The average duration of labor was increased by half an hour, some of the patients became very excitable, and the children sometimes breathed more tardily than under other circumstances.

There is no positive evidence that the drug permanently injures the child. These drugs could be repeated at intervals of several hours to maintain the condition of amnesia, which was disturbed.

This treatment has been brought prominently before the public by a popular periodical which has organized a mission through the country by sending a woman to lecture upon the subject in some of the large cities. The popular presentation of the matter has no scientific value, but has attracted considerable attention.

As a matter of fact, this method was first described by von Steinbuechel in 1906. It was taken up by a number of obstetricians in Europe and America, but was not enthusiastically adopted. The disadvantages were the uncertainty in the action of the drugs, the frequent excitement which ensued, asphyxia in the newborn child, and the prolongation of labor. Isolation, trained nursing, and constant observation, were necessary to carry out the treatment.

During the past year a number of papers upon the subject have appeared by American writers, and the method has again been tried in our leading clinics. The consensus of opinion at the present time

<sup>1</sup> Surgery, Gynecology and Obstetrics, May, 1914.



is that the method requires isolation, constant observation, and trained nursing, that the drugs act uncertainly, often producing excitement, headache, and vomiting, that labor is prolonged, and that the children are often born asphyxiated.

Very few obstetricians, if any, are willing to employ this method in private practice with patients in private houses. Those who have used it most limit its employment to hospitals where the patients can receive constant attention. The method is still upon trial, and further experience is necessary before a positive opinion concerning its merits can be given.

Its indiscriminate employment in private houses without suitable attention and nursing cannot fail to do harm.

The reviewer has had opportunity to observe the method and has not thought it sufficiently reliable to adopt it. In the early stage of labor when the pains are nagging and the patient is threatened with exhaustion, morphine and atropine, given hypodermatically, are of direct practical value. A copious, hot, high enema, and frequent emptying of the urinary bladder to prevent distention and pressure, are also useful.

During the second stage of labor, if fatigue and exhaustion threaten, the use of strychnine and digitalis hypodermatically will prevent exhaustion and bring about efficient uterine contractions. With this may be combined small doses of codein to advantage.

At the moment when the child is expelled, a rapid inhalation of ether will produce complete unconsciousness, relax the tissues, permitting the physician to properly guard his patient and facilitate the expulsion of the child. From such anesthesia the patient awakens immediately without shock or disturbance.

**The Use of Pituitary Extract in Labor.** Madill and Allan,<sup>1</sup> of the Rotunda Hospital, Dublin, reports the results of pituitary extract in 147 cases. They found that it undoubtedly increases the strength of the uterine contractions, which maintain their physiological character. The best results were obtained when the drug was administered during the second stage of labor. Its use thus lessens the number of forceps operations and the dangers which attend them. Properly given, it is safe for the mother and for the child—as safe as the use of forceps. In placenta previa, after version has been performed, it may assist in securing the spontaneous expulsion of the fetus and in causing prompt uterine contractions after the womb is emptied. The puerperal period in these cases was normal.

The article is accompanied by illustrative charts showing the effect of the drug upon the fetal heart, and also upon the uterine muscle. In vaginal operations, where version is performed, and after the cervix has been completely dilated by bags, pituitary extract may be of value.

<sup>1</sup> Surgery, Gynecology and Obstetrics, August, 1914.

A drug causing prompt and powerful contractions in unskilful hands may be a very dangerous substance. We can recall distinctly the period of obstetric practice when ergot was given indiscriminately to produce efficient uterine contractions. The dangers and disadvantages of this were seen in a considerable increase in the mortality and morbidity of the fetus, and in the frequency of lacerations and fistulae in the mother. The use of ergot before the uterus was emptied had something to do with furnishing the abundant clinical material which led to the development of modern gynecology. We believe it to be a safe clinical rule never to give it during labor until the child has been born. A few moments before the expression of the placenta it may often be administered to advantage, thus securing prompt contraction of the uterus after the placenta has been delivered.

**Accidental Hemorrhage with Free Blood in the Abdominal Cavity.** In the *Journal of Obstetrics and Gynecology of the British Empire*, January, 1914, Clifford reported a case of accidental hemorrhage with free blood in the abdominal cavity.

In the same journal (August, 1914), Shaw reports a similar case. The patient was almost nine months pregnant, with a history of accidental hemorrhage, the vagina having been tamponed with gauze. She had had twelve previous pregnancies, and the urine was loaded with albumin. Upon admission to the hospital, the gauze was removed, the membranes ruptured, and a tight abdominal binder applied. Labor pains soon commenced, and a dead male child was born three hours after admission.

With the placenta, several large clots of blood were delivered, followed by free hemorrhage. This was arrested by a hot vaginal douche, ergot and pituitary extract, and, as the patient was collapsed, a pint of saline solution was given under the breasts as a stimulant. A slight persistent trickling of blood continued, and three hours later the hot intra-uterine douche was repeated, the uterus was packed with gauze, and another dose of pituitary extract was given. A slight but constant hemorrhage persisted, the patient was greatly shocked, and a repeated hot intra-uterine douche had no effect.

Upon opening the abdomen, a half pint of free, clotted blood was found. On the posterior surface of the uterus were several slight abrasions, just extending through the peritoneum, through which the hemorrhage had come. Both broad ligaments were greatly swollen and almost black from a large hematoma, the extravasation of blood on the right side having extended along the pelvic wall almost to the cecum. The uterus was extirpated, and the opening of the vagina closed and covered with peritoneum. There was great difficulty in checking hemorrhage from small vessels deep in the pelvis.

The patient's condition was most critical at the conclusion of the operation, and she was kept in the Trendelenburg posture, and intrav-

enous injections of salt solution given. The urine gradually increased in quantity and the albumin disappeared in four days. Diarrhea supervened, and the patient could digest nothing, and died of exhaustion six days after the operation.

At autopsy, there was a slight amount of clear fluid in the peritoneal cavity, the intestines were much distended but not injected, and contained very foul, thin, watery, yellow material.

The right ureter was caught in a ligature and was distended; also the pelvis of the kidney. Both kidneys were apparently healthy. The lungs were edematous.

The urine was deep red in color, almost black, from extravasated blood. The wall of the uterus was infiltrated with blood. The uterus contained a large quantity of fibrous tissue with little increase in the elastic tissue.

The immediate cause of the hemorrhage was toxemia in a multiparous uterus in which the elastic tissue had been largely replaced by fibrous tissue.

**Coagulen in the Treatment of Hemorrhage.** Amann<sup>1</sup> reports his experience in the use of coagulen in the clinic at Munich. This substance was originally introduced by Kocher and Fonio, and is derived from blood corpuscles. It was first employed in the clinic at Basel. It is available in a powder, from which a 10 per cent. solution in normal salt solution should be freshly prepared. This cloudy solution is cooked or sterilized for two or three minutes without destroying its efficiency. When it is applied locally, the blood is first sponged away, and the solution sprayed or injected upon the bleeding area, and a tampon soaked in the solution is applied. This tampon should be carefully removed after a short time.

Amann's experience showed that the remedy worked promptly in the oozing of blood from a considerable surface. Thus, in operating where it was necessary to separate adhesions, and oozing followed, the application of the remedy by the tampon was especially valuable. In cases of persistent oozing from the uterus, a subcutaneous injection of the solution also gave good results.

**Concentrated Formalin in Persistent Hemorrhage from the Uterus.** Gerstenberg<sup>2</sup> has had good results in the treatment of persistent oozing from the uterus by the application of concentrated formalin when the uterus was well dilated, and when a chronic condition of oozing, or chronic inflammation was present. Such might occur after an abortion, and when curetting had been done after abortion and oozing still persisted.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 34.

<sup>2</sup> Ibid., No. 35.



## THE PUERPERAL PERIOD.

**The Prevention of Postpartum Hemorrhage by Intravenous Injections of Extract of Hypophysis.** Kreiss<sup>1</sup> believes that the danger of postpartum hemorrhage through uterine relaxation is greatly diminished since we have had the extract of hypophysis available. He discriminates between atony and hypotony of the uterus. When the first occurs, the body of the womb dilates, forming a sac which it is difficult to bring to contraction by mechanical, thermic, electrical, or chemical means; while in the latter, in the hypotonic condition, when the uterus is but partly relaxed, the organs react promptly to various stimuli. The atonic stage may develop from the hypotonic, when it is difficult to rescue the patient from the dangers of collapse, shock, and death. The hypotonic condition is often observed after difficult labor, as in contracted pelvis, sudden emptying of the uterus, or cases in which the uterus has been overdistended during pregnancy or labor. In hospitals, the hypotonic condition is usually controlled without difficulty. Massage of the uterus, the giving of pituitrin and ergotin hypodermatically, hot intra-uterine injections of potassium permanganate, or of ice-cold 50 per cent. acetic acid solution, usually produce prompt contraction.

In private houses, however, where the physician is at a great disadvantage, the condition may readily become very serious.

The writer has obtained excellent results by the use of *hypophysin*, an extract of the pituitary gland, which is dissolved in a sterile sulphate. The use of this substance produces contraction of the uterus which lasts from ten to twenty minutes, followed by intermittent contractions resembling those of labor, and terminating in a tonic state of the uterine muscle. He reports three typical cases in which the remedy caused a prompt and vigorous effect.

Regarding the technique of the injection, he used from 0.5 to 1 c.c. of hypophysin. The smaller dose is usually sufficient. The injection is usually made slowly, occupying half a minute. Recently he has combined the injection of pituitrin with ergotin, injecting it into the substance of the muscles, the effect of the latter becoming established in from ten to fifteen minutes.

The writer has also employed a substance known as *tenosin*, a preparation of secale cornutum, in doses of 1 c.c. subcutaneously, or into the muscular substance. In some cases in which he had used this preparation—tenosin—by intravenous injection, a very decided fall in blood-pressure occurred, accompanied by symptoms of collapse.

**Tuberculosis of the Breasts.** Deaver<sup>2</sup> reports 45 primary cases of tuberculosis of the breast, and 29 secondary cases. The great majority of the reported cases occurred during the period of reproductive activity.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 3.

<sup>2</sup> American Journal of Medical Sciences, February, 1914.

There seems no positive evidence that the mammary changes incident to pregnancy are more predisposing to tubercular involvement of the breast from a distant focus than to the so-called primary involvement. Some writers assert that lactation is possibly the most predisposing cause of tubercular mastitis.

The general health of the patient may remain good, and the disease may be discovered in a patient who is nursing a child, as in a case reported by the reviewer.<sup>1</sup>

The treatment consists of surgical procedure, and no reported case of mammary tuberculosis has died as a result of operation. Recurrences are comparatively rare, and usually occur in patients having pulmonary lesions. Tubercular peritonitis, meningitis, or acute miliary tuberculosis, in some instances manifest themselves years after the original operation. In the secondary form of mammary tuberculosis, the prognosis depends entirely upon the activity, location, and extent of the primary focus.

**Postpartum Pyelitis.** Murray<sup>2</sup> reports three typical cases of postpartum pyelitis.

The first was a primipara, aged twenty-six years, in good health before she was delivered, by manipulation, of a child in breech presentation. For a week afterward the temperature rose steadily to 102° F.; during the second week there were one or two remissions to 99° F.; but the general tendency was unfavorable, and sixteen days after delivery the patient's temperature was 103.2° F.

No cause in the pelvis, abdomen, or breasts, could be found for the fever.

On examining the urine, it was acid, contained pus and cultures showed coliform organisms.

The patient recovered with the use of acid sodium phosphate and urotropin.

The second case was that of a multipara, delivered by forceps, who had fever on the following day, reaching 103° F. There was no tenderness in the abdomen or pelvis, but the uterus was flabby, with subinvolution. The patient when seen in consultation, was receiving energetic treatment by intra-uterine douches and antistreptococcic serum. She was remarkably comfortable, but wasted, although she took her food very well. The eager appetite and general appearance suggested diabetes, and an examination of the urine showed an acid reaction, 4.5 per cent. glucose, pus and coliform organisms. In spite of full doses of alkali, the patient died in coma two days later.

The third patient, a multipara, was delivered normally of a premature, stillborn child, and had fever on the following day. At the end of the third week the temperature ranged from 102° to 104° F., with a pulse from 104° to 120°.

<sup>1</sup> Medical News, Philadelphia, June, 1897.

<sup>2</sup> Journal of Obstetrics and Gynecology of the British Empire, February, 1914.

The general appearance strongly suggested typhoid fever, but there were no spots, or enlarged spleen, and the pulse was more rapid than usually seen in typhoid.

The uterus was soft and subinvolved, but there was no tenderness or thickening in the pelvis, and no tenderness on pressure over the kidneys.

The patient was receiving treatment with intra-uterine douches and antistreptococcic serum. The Widal reaction was negative, and the bacillus typhosus could not be demonstrated in the blood. The urine was cloudy from bacilluria, and the deposits obtained by the centrifuge showed pus cells. Acid sodium phosphate and urotropin produced no improvement.

A vaccine was prepared from the coliform organism cultured from the urine. With the use of this, the patient steadily improved, and in two weeks the temperature was normal.

The writer is convinced that in this case the vaccine was of great service. He believes that the dose of any vaccine must be found by trial for each patient and for each recipient at that particular time. In acute cases of pyelitis it is not easy to determine the dose, and the first may vary from three to thirty millions of autogenous coliform organisms. If no local reaction be produced by the smaller doses, this must be rapidly increased at intervals of a day or two, until a result is obtained. The greater the intermissions of temperature, the smaller will be the dose.

In the case narrated, thirty millions was the first dose, increased within two weeks to two hundred and fifty millions.

In using the urotropin treatment, the Rimini-Burnham test should be used to ascertain whether formalin is being produced. The normal acidity of the urine may be insufficient for this purpose, and acid sodium phosphate in one-half dram doses, three times daily, should be given. The urotropin and phosphate should be given separately. Larger doses than usual of urotropin are required, as 5 to 10 grains, three times daily, even with sodium phosphate may produce less than one twenty thousandth part of formalin in the urine. After beginning with a small dose, urotropin should be increased to 20 or 25 grains, three times daily, avoiding irritability of the bladder, or disturbance of the stomach.

**The Differential Prognosis of Puerperal Fever.** Baeumer<sup>1</sup> reports the results obtained in the study of 28 cases of puerperal septic infection examined bacteriologically. Of these, 15 developed after labor at full term, 4 of them having been confined in the clinic; 11 were brought in from outside the hospital; 3 had been delivered by forceps; in 1 the placenta had been removed manually; 11 had spontaneous labors.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 14.



Various portions of the genital tract were explored to obtain material for examination, and cultures were made on blood agar. Cultures were made for both erobic and anaërobic bacteria.

Of the 15 cases having labor at full term, bacteria were found in the blood in 7, but could not be detected in 8; of the 7, 4 were the ordinary *Streptococcus hemolyticus*, 1 the *Staphylococcus hemolyticus*, and 2 the anhemolyticus *Staphylococcus pyogenes albus*. In the lochial discharge in 9 patients, streptococcus was found in 6; in 1, the bacillus coli communis; and in 1, the lower order of bacteria.

Of the fifteen patients having labor at full term, two died, one from streptococcus infection, preceded by double blindness four days before death, through invasion of the eyes by the infective germ.

The second fatal case was a staphylococcus infection with hemolysis. Shortly before death, in this case, the blood had a peculiar yellowish tinge, and, from 2 c.c. of the blood, 500 colonies of the infective bacteria were cultivated. Later on, the number greatly diminished.

The 13 other cases recovered, and those infected with the streptococci gained more rapidly than the others. As soon as the number of bacteria in the blood ceased to increase, the patients rapidly improved, and the bacteria soon disappeared, with a fall in temperature. When the infective germ was the bacillus coli communis, the illness was very much prolonged. Abscess in the parametrium developed, and the patient was ill, before recovery, for ninety-two days.

In endeavoring to make a prognosis from these cases, one must note that of the 15 patients, 13 recovered, while of 7 with a positive finding of bacteria in the blood, 5 recovered.

The recognition of bacteria in the lochial secretion gives no information of value concerning the prognosis. When, however, germs are found in the blood, the prognosis is much more grave. When germs in the blood are observed to increase, the outlook is even worse. Most unfavorable of all is the condition in which a metastases in various organs of the body develops. One cannot definitely base a prognosis on the presence of hemolysis.

Of 13 cases of puerperal septic infection after operation, of which 4 gave a positive result on blood examination, and 9 a negative, the hemolytic streptococcus was found 3 times, the hemolytic staphylococcus once. Among the entire 13, there was 1 case of tetanus; 4 of these patients died, 1 with tetanus, 1 with severe streptococcus infection with abscess in the lung, 1 from staphylococcus peritonitis, the germ having been found in the cervical secretion; 1 developed metastatic abscess in a lower extremity, but made a tedious recovery.

The prognosis in abortion, complicated by sepsis, depends considerably upon the treatment. Frequent interference is unquestionably disadvantageous, but when there is reason to believe that material remains in the uterus, this should be removed, if necessary, after incising the cervix.

**Oil of Turpentine in the Prophylaxis and Treatment of Puerperal Infection.** Cramer<sup>1</sup> has for ten years used turpentine oil in the local treatment of puerperal infection. His first case was a severe infection in which a diphtheritic membrane had formed upon the cervix, vagina and perineum. The substance used came from the Hartz Mountains, while the officinal oil of turpentine contained from 15 to 30 per cent. of the actual substance.

The writer employed the pure turpentine oil undiluted, by direct application upon cotton, to puerperal ulcers and to the uterine cavity. He made a thorough application of the same substance to the interior of the uterus.

As regards the effect of such application, we know that injected into subcutaneous tissue, oil of turpentine produces sterile abscess. Something of this sort may take place after the local use of the remedy.

As regards the method of using it, in all cases the uterus must be completely emptied of portions of placenta and decidua. This may be done with the finger or placental forceps, or with the blunt curette. The last is considered the best during the first days of the puerperal period. The bleeding which follows may be arrested by a temporary tampon of gauze or cotton. When this is withdrawn, an application of the turpentine oil is immediately made.

The article is illustrated by temperature charts, showing a marked fall in temperature and pulse after the application.

**Labor and the Puerperal Period in East Africa.** Deppe,<sup>2</sup> of Tanza, from observations among the natives, finds that the actual parturition is usually of short duration. Complications, however, are more frequent than among Europeans. Premature rupture of the membranes is common, and may occur even before the beginning of the pains. The children are larger and heavier than in the temperate zone.

A greater number of these patients require closer observation than the whites. It is especially necessary to transfer them, if possible, to hospital. Among the whites living in the tropics, an increased irritability of the nervous system is observed. This seems to be caused largely by hyperemia of the pelvic organs, which is commonly seen in the tropics.

Change in climate frequently benefits puerperal patients who show signs of mental disturbance.

**The Diagnosis of Puerperal Tetanus.** Spiegel<sup>3</sup> reports three cases of puerperal tetanus, and finds, from his clinical observation, that the infection proceeds very rapidly and overcomes the resistance of the body with toxins. The cells of the nervous system, and, in lesser degree, those of other organs, are capable, however, without suffering in their

<sup>1</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xxxix, Heft 6.

<sup>2</sup> Zentralblatt f. Gynäkologie, 1914, No. 40.

<sup>3</sup> Archiv f. Gynäkologie, 1914, Band ciii, Heft 2.

functions, of taking up a great quantity of tetanus toxin—a fact which may possibly be explained by the long period of incubation.

After the central nervous system has absorbed so much as it can of the poison, there ensues a period of saturation which causes injury to the motor centres and brings about the development of convulsions.

Injections of serum, from 400 to 1000 c.c. at a dose, may be required to neutralize the poison formed in the body. In the effort to secure the elimination of the poison, the interior of the uterus should be cleansed with antiseptic fluid as thoroughly as possible. If serum cannot be obtained, a good result may be sometimes secured by bleeding, followed by transfusion with normal salt solution and lumbar puncture. Some authorities believe that adrenalin is useful in these cases.

In attempting to cleanse the interior of the uterus, 70 per cent. alcohol is thought to be especially useful. A solution of magnesium sulphate—15 per cent.—may be used by intralumbar injection, the dosage being from 5 to 10 c.c.

**Ligation of the Vena Cava for Puerperal Pyemia.** Fromme<sup>1</sup> describes the case of a patient, aged twenty-four years, who, a year and a half previously, had a normal confinement, and was again pregnant.

She was obliged to remain in bed for a time because of vaginal hemorrhage, but finally aborted, the attending physician practicing intra-uterine manipulations.

After the curetting or irrigation of the uterus there was a chill, followed by a temperature of 104° F., then falling to normal. A little later another chill and high fever occurred.

Thinking that a portion of the placenta remained in the uterus, it was curetted without result. Daily chills followed. High temperature then developed, with a falling pulse, and a sterile condition of the blood. A severe chill, followed by high fever, occurred, then several days of normal temperature, with a return of chills and fever.

Examination of the pelvic tissues was practically negative. Edema of the right labium developed, followed by swelling in the upper portion of the right thigh. Thrombosis in the external iliac vein was diagnosed. The chills again occurred—in all, thirty-one in number—in varying intensity. Quinine, collargol, and other remedies had produced no result.

Accordingly, section was performed, and the right spermatic vein tied just before it empties into the vena cava. The left spermatic vein was normal and was not ligated. The right iliac vein was separated from its surrounding tissues with difficulty, the right iliac common artery was also freed, and some red and swollen lymphatic glands removed from the proximity of the vessels. The left common

<sup>1</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 2.



iliac vein was free from thrombi, but the site of thrombosis seemed to be in the right iliac vein.

There seemed no possibility of getting control of the situation without ligating the vena cava. This was accordingly done with a thick silk ligature. The few small vessels about it were also tied. This ligation produced no effect upon the pulse and general condition of the patient. The wound was immediately closed without drainage.

The patient bore the operation well. On the following day a rise of temperature occurred, with the development of bronchopneumonia. After the operation the pulse was full, showed considerable tension, and could readily be counted. The patient's temperature, however, fell, the wound healed by first intention, but on the tenth day after the operation another chill occurred. This was followed by repeated chills, bronchitis, pleuritic exudate, failure in the action of the heart, and death.

The writer believes that the chills after the operation and the speedy death of the patient were brought about through the thrombotic processes in the bloodvessels, which had taken upon themselves the backward current of the venous blood from the left leg to the left half of the pelvis. This case shows the possibility of ligature of the vena cava in cases of septic infection.

**The Retention of Portions of Placenta and Puerperal Fever.** Winter<sup>1</sup> replies to Ahlfeld in a controversy as to the importance of portions of placenta remaining after labor and causing puerperal septic infection. He quotes again his statistics of 149 cases of retention of placental fragments, of whom 44 per cent. had a puerperal period without fever, 50 per cent. a complication with mild fever, and but 6 per cent. infection of considerable severity.

**Gangrene of the Limb During the Puerperal Period.** Cumston<sup>2</sup> calls attention to the possibility of gangrene of the limbs from occlusion of the vessels in puerperal septic infection. He reports personally no case, but cites Womser's statistics, showing that out of a total of 54 cases, 24 were submitted to amputation; 6 of these died—a mortality of 25 per cent. The 30 remaining cases not operated upon, died.

This would seem to indicate that in cases in which the general condition was fairly good, prompt action is of value.

The general treatment consists in sustaining the strength of the patient.

**Infection in the Puerperal State by the *Bacillus Coli Communis*.** Simpson and Bernstein<sup>3</sup> report a case in which fever began on the twenty-third day after labor. A diagnosis of infection by the *bacillus coli communis* was made, and the site of the infection was thought to be the kidneys.

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1915, Band xli, Heft 1.

<sup>2</sup> American Journal of Obstetrics, January, 1915.

<sup>3</sup> British Medical Journal, April 4, 1914.

The only treatment employed was vaccines, the good results of which were seen within a few hours after each of the first four injections. For a time these were discontinued, when the patient became worse, and doses of 350, 400, 450, and 500 millions were given, when the cure became permanent.

Two other cases are reported in which vaccines seemed to be efficient. In the two last mentioned, acid sodium phosphate and urotropin were also administered.

The differential diagnosis was made by excluding puerperal septic infection and by obtaining colon bacilli in pure culture from the urine. The high fever persisting late in the puerperal period, with the absence of pelvic symptoms, was significant of the variety of infection present.

### OBSTETRIC SURGERY.

**Hydrosalpinx made to Prolapse by the Use of Obstetric Forceps.** Kocks<sup>1</sup> describes the case of a young primipara in labor at term in whom the forceps was applied to terminate a protracted and exhausting labor. After several contractions, a shining sac-like body, resembling intestine, appeared in the vulva. It was at first thought that a loop of intestine had been dragged down. This body was 12 cm. long and 5 cm. thick, and was recognized as the Fallopian tube. As the head had not been delivered, the forceps were immediately removed and the tumor opened, when a clear fluid secretion escaped. The tumor was ligated and removed, the forceps reapplied, and the head extracted.

Upon examination, the point of rupture was on the left side, there was no hemorrhage, the rent in the vagina was closed with a few sutures, and the patient made an uninterrupted recovery.

Playfair has described what he terms "natural ovariectomy" in which a small ovarian tumor was delivered through a rent in the vagina before the fetal head. The writer thinks that the term "natural salpingotomy" might apply to his case.

**Abdominal Cesarean Section Performed Under Local Anesthesia.** Webster<sup>2</sup> has performed 14 abdominal Cesarean sections under local anesthesia, using *novocaine*, 1 to 200. The cases selected were those in which the condition of the kidneys or lungs was such that the use of ether or chloroform was contraindicated. It was necessary to infiltrate the abdominal wall only to conduct the operation successfully. By previous experiments, he had found that the parietal peritoneum is sensitive, while the peritoneum covering the viscera is but slightly sensitive. The uterus, broad ligaments, round ligaments, and utero-sacro ligaments were intermediate between the parietes and the viscera, as regards sensitiveness.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 25.

<sup>2</sup> Surgery, Gynecology and Obstetrics, February, 1915.

The firm tying of ligatures, or traction upon the tissues might produce unpleasant sensations. The incising of the uterus is rarely painful. The removal of the child does not cause pain, but sometimes distress, probably from traction on the uterus.

The patient was disturbed when the assistant grasped the broad ligaments, and the lower uterine segment, because of traction. The child was not asphyxiated, and breathed immediately on birth.

In the *Journal of the American Medical Association*, March 6, 1915, Webster describes his use of *nitrous oxide gas in obstetrics*. He believes that the scopolamine-morphine method is variable and uncertain. He has had the best results with nitrous oxide gas, not only in normal labors but in obstetric operations. Sometimes 3 per cent. oxygen is added, at other times the gas is undiluted and pure. A small nasal inhaler is used, the mouth of the patient being uncovered. The gas is under low pressure, and the patient is told to breathe quietly, with the mouth closed.

This method is inexpensive, the apparatus simple and easily transported, deep anesthesia is not necessary, and there are no ill effects to mother or child. The strength of the uterine contractions is not diminished, although the use of the gas may be continued for some time. It can be stopped at any time, which makes the method better than the use of drugs administered internally.

**Thirty Cases of Classic Cesarean Section.** Rachmanow,<sup>1</sup> from the obstetric clinic in Moscow, in 25,000 cases of labor reports 30 Cesarean sections. Of these, 7 were in the hospital during the entire progress of labor, and 23 were brought in after labor had been going on for some time; 25 of them had been examined before they entered the hospital. Two patients, who died, had been repeatedly examined before admission.

Twenty-eight of the mothers, and all of the children, recovered, the puerperal period being uncomplicated in 26, and 2 having considerable fever, from which they recovered.

In 28 of the cases the patients requested sterilization, and resection of the Fallopian tubes was practiced.

To avoid wounding the enlarged veins of the broad ligaments, a portion of the tubes 2 cm. from the uterus was resected. The body of the uterus was then fastened to the abdominal wall by sutures and opened longitudinally in the middle line between the line of sutures. In many cases the incision went through the placental site. This seemed to make no difference in the recovery of the patient, nor was there hemorrhage at operation, although the uterus was not compressed in any way. No ergot was given to cause uterine contraction.

The anesthesia was chloroform with oxygen; the duration of the resection of the tubes, and the Cesarean operation was from thirty to forty minutes. Immediately after operation, morphine was given hypo-

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 25.



dermatically. Ten or twelve hours afterward the patient turned upon her side. Warm liquids were given by the mouth, and warm salt solution by the bowel. For the first two or three days nothing but tea and water were given by mouth; a laxative was given forty-eight hours after operation; the diet was gradually increased after the bowel movement.

The stitches were removed about the eighth day. In three of the cases the amniotic liquid had escaped before operation; in two, there was doubt about it; while in 25 cases the membranes had not yet ruptured.

In the 30 cases there were 11 primiparæ and 19 multiparæ.

**The Treatment of Pregnancy, Complicated by Disease of the Heart, by Cesarean Section.** Barris<sup>1</sup> reports a case, in the Maternity Department of St. Bartholomew's Hospital, of a multipara who had had rheumatism some years previously.

She was admitted with marked dyspnea, profuse sweats, and a cold and livid condition of the skin. Her pulse was irregular and could not be counted, the heart greatly dilated, and the urine contained albumin.

She was referred to the medical ward from the maternity department where an electrocardiogram showed auricular fibrillation and disorganization of the ventricular muscle. Although the patient was in the hospital some months, she improved but little, and it was thought unwise to allow the pregnancy to continue indefinitely.

The general condition made anesthesia by inhalation impossible, and, accordingly, stovaine and dextrose, dissolved in sterile water, were injected between the third and fourth lumbar vertebræ. A second dose was administered after twenty minutes had passed, and full anesthesia was obtained in a few moments.

The operation was performed in the usual manner, and a portion of both Fallopian tubes removed. During the operation, pituitary extract was injected, and oxygen given by inhalation.

The patient bore the operation well, but vomited afterward. There was no evidence of shock, and the blood-pressure at the conclusion of the operation was 160. The pulse varied from 90 to 75. The child was born living.

At the close of the section, a sand-bag was placed on the abdomen to maintain intra-uterine pressure. The patient's recovery was uninterrupted.

The writer also refers to Watts's case of Cesarean section under spinal stovaine anesthesia, the patient having mitral stenosis and kidney disease. The operation was done at eight months' pregnancy, and mother and child made good recoveries.

He also cites a case reported by Wyatt, in a patient six months advanced, with a greatly dilated heart. She was given hospital care until within two weeks of full term. Her general condition had improved but she had had two attacks of threatened heart failure.

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, April, 1914.

Section was done under spinal anesthesia with tropococaine and adrenalin injected into the spinal canal between the second and third lumbar vertebrae, cocaine having previously been used upon the skin. Complete anesthesia from the subcostal line downward speedily developed. A portion of each Fallopian tube was removed to secure sterilization. The patient vomited during operation, but her condition was good until its close. On the fifth day, the patient died from cardiac failure. Up to that time, she had done well.

He also quotes a case at the Queen Charlotte Hospital, where Stabb operated upon a primipara in the thirty-fifth week of pregnancy. The patient had albumin in the urine, with signs of double mitral disease. Stovaine was injected, and a small quantity of gas and oxygen given.

A portion of the tubes was removed for sterilization. The patient passed through the operation well, but the child died nine days afterward from bronchopneumonia.

Kreiss<sup>1</sup> mentions a case of heart disease treated by Cesarean section under spinal anesthesia.

There is much to be said in favor of this method. No small advantage is found in the fact that sterilization can be so readily effected. The uterus contracts well after the child is removed, and, should it not do so, pituitrin, given by hypodermatic injection, will be found efficient.

**Abdominal Cesarean Section in the Service of the Lying-In Hospital in New York City.** A. B. Davis<sup>2</sup> states that over 80,000 women, at or near full term, have been delivered by the staff of this hospital, with records of 571 deliveries by abdominal Cesarean section. Of the cases operated upon, the maternal recovery rate was 89.3 per cent.

The period of recovery has grown distinctly shorter, from twenty-five days at first to seventeen and seven-tenths days, the average being fourteen. The maternal mortality has been 10.7 per cent. from all cases.

In 1500 consecutive cases in the in- and out-patient service of the hospital, there were 122 craniotomies. The maternal mortality of this operation was 15.5 per cent. In clean cases delivered by Cesarean section, shortly before, or soon after, labor begins, the maternal mortality is between 2 and 3 per cent., and there is no fetal mortality. The fetal mortality was 12 per cent., and 4 per cent. of the children were stillborn.

The operation was performed for the eclampsia and toxemia of pregnancy in 35 cases, with a recovery rate of 63 per cent. for the mothers, and a mortality of 37 per cent.; 30 per cent. of the children were either stillborn or died.

Placenta previa was the indication in 21 cases, two of the mothers dying of sepsis; there was considerable fetal mortality due to prematurity.

<sup>1</sup> *Zentralblatt f. Gynäkologie*, 1913, No. 50.

<sup>2</sup> *American Journal of Obstetrics*, January, 1915.

The main indication for Cesarean section was contracted pelvis or spinal deformity, present in 79 per cent. of the cases. There were 7 postmortem sections.

The writer's personal experience was 237 operations, a maternal mortality of 10.12 per cent. The infant mortality of this series was 13.8 per cent.

The method employed by the writer is high incision 8 to 10 cm. long, from above down to the umbilicus. The uterus is not turned out of the abdominal cavity but pressed up against the abdominal wall, an assistant making continuous pressure while the uterus is emptied. As little interference as possible is practiced during delivery, and the parts are immediately closed by suture.

The advantages claimed for the method are that the abdominal wall is very thin at this point, the tissues elastic, and no important structures are divided. There is much less chance for the escape of the intestine and omentum, and less opportunity and necessity to handle the abdominal contents. The subsequent occurrence of hernia is rare, and the general results have been favorable.

**Posterior Cervical Section.** Polano<sup>1</sup> reports 7 cases of posterior cervical section, with good results, excepting one in which the mother had severe eclampsia. In addition to his cases, he cites those of Truzzi—12 in number—with favorable results.

**Postmortem Cesarean Section.** Zengerle<sup>2</sup> quotes the old law of Numa Pompilius. This stated that a pregnant woman dying near term should not be buried before birth had been accomplished by opening the body. This Roman law has been practically adopted in all hospitals.

When summoned to the patient, he found a multipara unconscious, with highly contracted pupils, and a strong regular pulse. The amniotic liquid had escaped three hours previously; labor pains had begun, followed suddenly by convulsions and unconsciousness.

As the circumstances were such that no operation could be properly done in the patient's lodging, she was placed in a motor car and taken as rapidly as possible to the hospital. The journey occupied but a few moments. Upon arriving at the hospital, it was found that the patient was dead. There was no effort at respiration, no heart beat, no reaction of the pupils; but the fetal heart still beat, although weak and slow.

The child was at once delivered by Cesarean section, and Schultze's method of resuscitation practiced in the child. This resulted in the discharge of a large quantity of mucus from the child's mouth and nose. Respiration was gradually established, and thirty days after the birth of the child it was reported vigorous and in good condition.

Küttner<sup>3</sup> has collected 41 cases of postmortem Cesarean section, and adds 4 under his own observation. In 31, a living child was delivered.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 30.

<sup>2</sup> Ibid., No. 29.

<sup>3</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xl, Heft 1.



In the writer's 4 cases, the children were living at operation. The mothers had perished, two of them from eclampsia, one from myocarditis and edema of the lungs, and one from heart disease. He had also operated upon two patients who were in a fatal condition—one from eclampsia, and one from coma.

The death of one mother followed an hour and a half after the operation, while the other survived the operation four hours. Both of the children were delivered alive.

**Cesarean Section for Myoma.** Strassman<sup>1</sup> reports a primipara, aged forty-one years, who had a myomatous tumor of the uterus of three or four years' standing. The tumor was impacted in the pelvis and could not be dislodged. Labor pains were useless, and delivery was accomplished by section, the membranes not having ruptured. A well-developed and vigorous male child was delivered. The uterus was extirpated, retaining the ovaries, a strip of gauze was passed through into the vagina, and the lines of suture covered by peritoneum. The patient made a good recovery, leaving the hospital on the sixteenth day.

**Cesarean Section for Stenosis of the Vagina Through Scar Tissue.** Beckman<sup>2</sup> reports the case of a patient who had been previously delivered by a very prolonged and difficult forceps operation. Lacerations and vesico-vaginal fistula followed. The operation to close the vagina was especially difficult, and large amounts of scar tissue developed as a result of the patient's forceps delivery.

About a year afterward she entered the hospital pregnant and at term, and, upon examination, it was found that the vagina was so closed by scar tissue that the finger could scarcely be inserted into the upper portion. No fetal heart sounds could be heard, the amniotic liquid was foul in odor and evidently infected.

Celiohysterectomy was performed, with the delivery of a macerated fetus. The mother made a good recovery.

**Cesarean Section for Unusual Conditions.** Sokoloff<sup>3</sup> performed the classic section upon a patient who had an ovarian cyst twisted upon its pedicle, and was bound down in the pelvis. He also performed the operation upon a patient who had previously been cured of a vesicovaginal fistula by an extensive operation. So much scar tissue had formed as a result, that delivery through the vagina was impossible. Both operations resulted successfully for mother and child.

Nowikoff<sup>4</sup> has performed Cesarean section seven times for placenta previa, and once for contracted pelvis, using Fritsch's method with transverse incision. All the mothers recovered, and six children were born living.

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 42.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 1.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

He is strongly in favor of the operation for placenta previa in the interests of both mother and child.

He also had 7 extraperitoneal sections after Latzko's method, and 1 transperitoneal section. The mothers recovered, but one of the children died on the fourth day.

**The Reproductive Power of Patients after the Major Obstetric Operations.** Itzkowitch<sup>1</sup> reports 19 cases of hebostiotomy in which 13 of the patients became again pregnant, 15 patients in whom extraperitoneal Cesarean section was performed, 6 of whom again became pregnant, and concludes from this that these major operations do not diminish the reproductive power of the individual.

He also gives the results of 807 confinements, 68 per cent. spontaneous, and 32 terminated by obstetric forceps.

A study of these cases shows that, in contracted pelves, the percentage of those requiring operation steadily increases. In contracted pelves, 78.7 per cent. of the patients were spontaneously delivered.

In treatment, he has abandoned prophylactic version, and rarely uses the high forceps. In 150 induced labors he had 78 per cent. spontaneous births, his method consisting in rupturing the membranes.

The mortality of mothers with contracted pelves was 0.48 of 1 per cent.; of the children, 8 per cent.

**The Mortality in Cesarean Section.** Boyd<sup>2</sup> believes that the mortality in Cesarean section depends upon the skill of the operator, and the patient's condition when operated upon. Clean cases operated upon before labor should not give a maternal mortality greater than 2 to 3 per cent. The test of labor is permissible under careful supervision, but danger of infection arises so soon as the membranes rupture. When the cases are undoubtedly infected, the classical operation should be declined. In suspected or neglected cases, the extra- or transperitoneal section is indicated. When the patient is seen late in labor and undoubtedly infected, supravaginal hysterectomy should be performed.

**Cesarean Section for Complete Ankylosis of Both Hip-joints.** Fuchs<sup>3</sup> reports the case of a patient who had a spontaneous labor six years before coming under observation, who had also two abortions. After one of these she had severe septic infection, with pyemia and metastases, resulting in long-continued illness, and ankylosis of both hip-joints.

Upon examination, the pelvis could not be accurately measured because of the condition of the hip-joints, but was evidently moderately contracted. The thighs could not be flexed, and it was impossible to conduct spontaneous birth through the vagina.

Examination under chloroform confirmed this opinion, and showed that muscular contraction was not the cause of the difficulty, but a

<sup>1</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xl, Heft 1.

<sup>2</sup> American Journal of Obstetrics, September, 1914.

<sup>3</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xxxix, Heft 4.

genuine ankylosis in the joint tissues. An *x*-ray picture completed the diagnosis.

The patient greatly desired a living child, and entered the hospital when pains began. There was no engagement and the child was in breech presentation in second position. Under the circumstances, the risk of vaginal delivery to the child would have been so great as practically to insure its loss. Accordingly, abdominal transperitoneal section was made, and a vigorous, well-developed child delivered.

The uterus was closed in the usual manner, and the Fallopian tubes were cauterized by the thermocautery at the uterine extremity. Mother and child made an uninterrupted recovery.

In the literature, the writer has found 4 cases of double ankylosis of the hip—one reported by Bazocchi, resulting from rheumatism, and delivered successfully by Cesarean section. A second case was reported by Holmes,<sup>1</sup> a primipara, having tuberculous disease. The head of the child had become impacted in the pelvis, and in efforts to deliver, the child was stillborn.

Baumm reported, to the Gynecological Society of Breslau, a case of double ankylosis of the hip-joint, in which the *x*-ray showed the possibility of spontaneous birth. The patient was allowed to come into labor and delivered herself.

At the same time, Fraenkel showed the *x*-ray picture of a case of double hip-joint ankylosis resulting from congenital luxation of the joints. At the beginning of pregnancy, the legs were greatly bent and in flexion. As pregnancy proceeded, this condition grew better, and the patient had a spontaneous labor, lying upon her side.

The writer concludes that the abnormal fixation varies greatly through interference with the pressure of the feet during labor and the development of strong expulsive pains. The contraction of the lower extremities in adduction interferes with the expulsion of the head, and especially with its descent and rotation beneath the symphysis.

The conduct of natural labor is sometimes possible with the patient turned upon her side, and by making an incision into the perineum and vulva. In cases in which the contraction is extreme, and ankylosis firm, Cesarean section is the only choice in breech presentation.

The reviewer has three times had occasion to perform abdominal Cesarean section for ankylosis of one hip-joint.

His first case was that of a very strongly developed, muscular woman, a primipara, aged forty years, who was a mental degenerate. The ankylosis had occurred in early life, was remarkably firm and strong, and there was very considerable shortening on the affected side. The pelvis was developed abnormally and irregularly. The fetus was large, and the fetal head could not be brought to enter the pelvic brim.

<sup>1</sup> American Journal of Obstetrics, December, 1904.



In view of the patient's physical and mental condition, and her age, and with the consent of her guardians, the child was delivered by celiohysterectomy with intraperitoneal treatment of the stump. Mother and child made an uninterrupted recovery.

The second case was a young primipara, with tubercular disease of the hip-joint which had been neglected in the beginning, finally necessitating prolonged treatment and operation, which was followed by considerable shortening with ankylosis.

The pelvis was irregularly formed, and the condition such that vaginal delivery would have been difficult and dangerous. This patient was delivered by elective abdominal section, without labor, retaining the uterus, tubes, and ovaries, and making a complete recovery. The child was well nourished and vigorous.

The third case was that of a woman, aged twenty-three years, who had tubercular hip-joint disease in early life, with repeated operations for the removal of dead bone. Complete ankylosis had resulted, with practical immobility and fixation of the pelvis. She had given birth to one child which survived, and in view of her physical condition and previous history, and their poverty, the husband and wife did not wish future pregnancies.

She was delivered by celiohysterectomy with intraperitoneal treatment of the stump, followed by the removal of an adherent appendix. She made a good recovery, and began to gain in weight soon after the operation. Her child did well.

**Cesarean Section Followed Subsequently by Rupture of the Uterine Scar.** Wolff<sup>1</sup> presented before the Obstetrical Society of Berlin a uterus upon which he had previously performed transperitoneal cervical section, followed in a subsequent pregnancy by rupture of the scar.

Theoretically, it might be considered that the scar after cervical section should be stronger than that after section through the body of the uterus, because, in subsequent pregnancy and labor, the cervical scar is not exposed to the action of uterine contractions. This is also true during convalescence from the original operation, so that it might be argued that union through the cervical scar should be more complete than by a scar in the body of the uterus. It might further be alleged that freedom from adhesion of the omentum and intestine, the fact that the placenta is not attached to the cervix in most cases, and that there is no formation of decidua in the region of the cervical scar, should all contribute to make an especially perfect union.

The essential element in the formation of a sound scar in any part of the uterus is union by first intention. This is of more importance than the location of the scar.

Wolff had collected 49 cases of rupture of the Cesarean scar in the

<sup>1</sup> Zentralblatt f. Gynäkologie, 1914, No. 13.

literature, in which not one had occurred in a patient in whom complete primary union had followed the original operation.

The maternal mortality was 26 per cent.; the fetal mortality, 60 per cent.

In discussion, Sigwart had the opportunity of examining 5 cases by a second operation, in whom the transperitoneal operation had formerly been made. In 3, he was able to repeat the transperitoneal cervical section; in 2, adhesions were so large and strongly developed that the original operation could not be repeated. In 4 cases there was nothing of especial interest to be seen in the old scar; in one, the patient had been sufficiently long in labor to produce considerable stretching and threatened rupture of the scar.

Sigwart concluded, from a study of these cases, that rupture in subsequent pregnancy and labor might occur after this operation. For this reason he would not wait until the cervix was completely dilated before operating, but, on the contrary, would perform the operation as soon as labor pains began. If, in any case, it was not possible to perform the extraperitoneal section, if the case was in an aseptic condition, equally good results could be obtained by other methods.

Jolly recalled the fact that, in the early history of abdominal section, some operators urged that the patient be sterilized to prevent the danger of rupture of the scar in subsequent pregnancy. Inasmuch as it had been shown that this accident may occur after the transperitoneal cervical operation, he thought that patients after this operation should be warned of this danger and instructed to report to the hospital should subsequent pregnancy occur. He would even go so far, with the assent of the patient, as to terminate pregnancy in the second or third month, when Cesarean section of any sort had been previously performed.

Strassman believed that it is of importance, in securing a strong sound scar after Cesarean section, that the sutures be tied, as far as possible, with the knots upon the inner aspect and not the outer aspect of the wound. He has sometimes followed this method in operating upon all hollow organs, like the rectum, the bladder, or the uterus. Stitches are inserted from the decidua toward the peritoneum, and again back, the knots coming on the inner aspect of the uterus. If the serous membranes be united by suture, the suture forms a thick foreign body, the threads gradually cut through externally, and in some cases the knots are discharged with the lochial discharge. In some instances one would do well to cover all such sutures, if possible, by catching up the serous membrane.

Strassman did not consider it of great advantage to make the Cesarean an extraperitoneal operation. He believes that it is important to operate quickly, and that plenty of room be taken for the extraction of the child. He leaves the uterus in the abdominal cavity, raising the

patient to something like the Fowler position, and thus avoiding contamination of the abdominal cavity. He terminates the operation by covering all lines of suture with peritoneum, which practically makes the operation an extraperitoneal one. In some cases he also adds vesical fixation.

Strassman would not perform therapeutic abortion in subsequent pregnancy, believing it to be unnecessary.

Breitstein<sup>1</sup> reports the case of a patient who, at the age of seventeen years, had a Cesarean section. The myometrium was closed with twenty-day chromic catgut, the stitches being interrupted and not passing through the serous layer or the endometrium. The serous or the peritoneal covering was united with a continuous suture of twenty-day chromic catgut and reinforced with a second line of peritoneal closure by a similar suture.

The patient had fever and profuse purulent vaginal discharge after the operation, with stitch abscess in the abdominal wall, which was drained. The patient left the hospital on the twenty-sixth day in apparently good condition.

In her next pregnancy she was delivered in spontaneous labor normally, followed by a good recovery.

In her third pregnancy she sent to the hospital for assistance in her home, and, when visited, stated that she did not feel as if anything was radically wrong. She had indefinite, irregular uterine contractions, not strong, and the abdomen was considerably distended. The temperature and pulse were very little above the average. There was no nausea, shock, nor evidence of hemorrhage. Abdominal examination was obscure.

It was impossible to clearly map out the position of the fetus, and fetal heart sounds could not be heard.

The patient stated that she had felt life until shortly before admission to the hospital. She had labor pains which gradually ceased. After twenty-four hours in the hospital, the patient had a copious bowel movement, followed by expulsion of gas. She felt more comfortable after the movement of the bowels and was able to get up and walk about. When she did this she would bend forward, supporting the abdomen with the hands, and complained of considerable distress.

Upon examination, the breech was above, the back anterior to the left, the head below at the brim and movable. It was thought that the fetus had died, and, accordingly, upon making a vaginal examination, the index finger was admitted through the cervix into the lower segment, when the uterus was found to be empty.

Upon opening the abdomen, the bag of waters was intact and the fetus was found free in the abdominal cavity, lying in the usual posi-

<sup>1</sup> Journal of American Medical Association, February 28, 1914.



tion. The membranes were ruptured, a dead child removed, and the placenta found attached to the external anterior surface of the uterus. This was manually removed and the uterus examined. Rupture was seen to have taken place in the Cesarean scar. There was no free blood in the abdominal cavity, but a dark clot in the left broad ligament was observed. The patient made an uninterrupted recovery.

Upon studying the uterus, it was found that, at the site of rupture, intense leucocytic infiltration was demonstrable, and the muscle in this region had been extensively invaded by trophoblastic elements.

Smith<sup>1</sup> reports the case of a patient, to whom he was called at her home, who had been in labor for about eight hours. The bag of membranes, full of prolapsed cord, was protruding through the os, which was about one-fourth dilated. The pelvis was considerably contracted, and the general condition good.

The patient was removed to the hospital and delivered by Cesarean section, the placenta being beneath the site of incision. The uterine incision was closed by two rows of sutures. Both mother and child made an uninterrupted recovery.

About five years afterward the patient was again seen in labor, in intense shock. It was stated that she had been having more or less severe pain for about two weeks, but would not enter the hospital. Following a severe and sudden pain, the patient collapsed and sent for a midwife. The midwife had given the patient brandy and applied external heat.

Upon examining the abdomen, there was evidently free fluid within the abdomen, there was no muscular resistance, and the fetus could be distinctly mapped out apparently just under the abdominal wall.

Morphine was administered, and the patient was removed to the hospital. Upon opening the abdomen, a large quantity of blood escaped, and a child, recently dead, was removed. The placenta was free in the abdominal cavity, almost entirely surrounded by omentum, and there were no adhesions to uterine peritoneum. An effort was made to close the rent in the uterus, which was in the line of the former scar, but as this could not be done satisfactorily, hysterectomy was performed. Although the patient was critically ill, she finally recovered.

The extraordinary feature in her history was that for two weeks she had indefinite labor pains, was not seen until seven hours had elapsed after the uterus had ruptured, and operation was postponed until at least an hour and a half later. She was taken five miles to the hospital, and her recovery must be considered as remarkable.

The reviewer has recently operated upon a strong young woman with a slightly-contracted pelvis, whose first labor developed naturally. The head of the child was large for the mother and engagement of the

<sup>1</sup> British Medical Journal, September 26, 1914.

head failed. After a fair trial of labor, she was delivered by celiohysterotomy. Mother and child made excellent recoveries, the mother nursing the child.

Two years later she again came to the hospital at full term. The child was in normal position and presentation, and the patient was again allowed to go into spontaneous labor. Hysterectomy had been proposed but was declined. After several hours of spontaneous labor without very strong pains, the patient had one especially strong uterine contraction. As no engagement developed, she was immediately delivered by section.

No trace of the former incision could be found in the uterus. The interior of the uterus was perfectly sound, and there were no abnormal adhesions of the fetal membranes. Mother and child made excellent recoveries, the mother nursing the child.

The method of suture employed consisted in closing the uterine muscle with the best quality of medium-sized silk, freshly boiled. These sutures did not pass through the decidua from the peritoneal covering of the uterus but were completely buried in the muscular substance. The peritoneal covering of the uterus was brought together by continuous sutures of fine silk.

The reviewer has several times performed repeated Cesarean section and has never been able to find a trace of the original scar. His method of closing the uterine muscle has been the same in all cases, but latterly he has substituted fine silk for catgut with continuous suture, in bringing together the peritoneal cover of the uterus.

**Extraperitoneal Cesarean Section.** THREE CASES OF EXTRAPERITONEAL CESAREAN SECTION. Gellhorn<sup>1</sup> reports three cases of so-called extraperitoneal Cesarean section. His method consisted in incising the parietal peritoneum, pushing off the visceral peritoneum, stitching the parietal peritoneum to the uterus, and thus excluding the free abdominal cavity. The operation was thus rendered extraperitoneal.

In one of his cases spinal anesthesia was employed. The results were entirely satisfactory. He states that in each case the patient had a strong linear scar, the uterus was of normal size, position and mobility, and the patient's general condition good on recovery. The reviewer has recently had the opportunity to observe the final results of this operation in a patient who had been delivered previously by a method very similar to that described by Gellhorn. This method, originally proposed by Veit, consists practically in the formation of a peritoneal fistula through which the child is extracted.

In the reviewer's case the patient was a rachitic negress, with a considerably contracted pelvis and a much deformed skeleton. She had made a good recovery from the first peritoneal-fistula operation.

<sup>1</sup> Journal of American Medical Association, January 16, 1915.

During the second labor the first stage was unusually prolonged, normal uterine contractions did not develop, and there was no attempt at engagement or descent. She was in a tenement which was not clean, and the circumstances were such that she could not be considered a strictly clean case. In view of this fact, and with the consent of the patient, that sterilization be done, she was delivered by a Porro operation, leaving the stump with a clamp in the lower portion of the abdominal incision.

The original operation had been made through a transverse Pfannenstiell incision. Upon opening the abdomen, the anterior surface of the lower uterine segment was seen to be covered by a mass of adhesions, in which could be distinguished two well-developed bands running longitudinally from the lower border of the upper expulsive segment to the suprapubic tissues. No effort was made to disturb this portion of the uterus, but the incision was made in the central portion at the fundus, and the child was delivered without difficulty. The stump was made high in the uterus just above the lower segment and was placed without difficulty with the clamp. The stump separated without suppuration, and both mother and child made perfect recoveries.

**Posterior Cervical Cesarean Section.** Polano<sup>1</sup> reports 7 cases of Cesarean section, in addition to those previously described, in accordance with this method. In 2, the operation was done for severe eclampsia; in 1, he operated a second time upon the same patient by this method; in 1, the patient was infected; and in 3, the operation was done upon women who had previously had suprasymphyseal section, followed by the development of strong adhesions to the anterior abdominal wall. One patient died—an eclamptic—who was pregnant with twins and practically moribund when brought to the hospital.

In discussion, Flatau had operated upon two cases by Polano's method. In the first case the child was born deeply asphyxiated; in the second case, mother and child did well.

The operation consists in an incision the breadth of the hand, the umbilicus being in the centre of the incision, drawing up the uterus sufficiently to give access to the posterior portion of the lower segment. Polano believes that this method has distinct advantages.

In discussion, Döderlein reported 106 cases operated upon in his clinic by extraperitoneal section. Of the 106 patients, 8 died; in 4, the death could be fairly ascribed to the operation, while 2 died of eclampsia, 1 of uterine atony, and 1 of heart failure. Five of the children died.

Döderlein stated that he has abandoned his method by inguinal incision, believing that the upper and central incision gives better results.

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1915, Band xli, Heft 1.



Küstner<sup>1</sup> showed to the Gynecological Society in Breslau a patient upon whom he had a few weeks previously performed extraperitoneal Cesarean section. The patient was a primipara with contracted pelvis, the child in face presentation, with failure to alter the presentation or to bring the child into the pelvis.

Küstner calls attention to his method of making an incision parallel to the linea alba outside the median line, and draining the tissues above the closed uterus with gauze. The wound had united eleven days after operation, and the patient was discharged in sixteen days in good condition.

Küstner is strongly opposed to closing the extraperitoneal connective tissue wound by suture. He believes that this tissue is very easily infected, and quotes Scheffzek's fatal case of infection in a supracervical wound. His method is practically that of an open wound above the closed uterus.

**The Permanent Results of Extra- and Transperitoneal Cesarean Section.** Rohrbach<sup>2</sup> reports the permanent results of Cesarean section in Küstner's clinic in Breslau. In seven years, Cesarean section has been done 117 times; in 6 cases the classic method was employed; in 93, the extraperitoneal, in accordance with Sellheim's original method; and in 18 cases the so-called deep transperitoneal method had been followed. The last 6 cases are not quoted. There remain then 87 extraperitoneal and 18 transperitoneal cases, among whom he has been enabled to subsequently examine thirty-eight patients. He gives a detailed description of the findings in these cases. He concludes that while, after the operation, there may be some temporary inconvenience and disability, it disappears after a short time. The ability of patients to work is in no way lessened. No disturbance of the functions of the bladder was reported, and no wounding of the bladder occurred at operation. The children were born living, and 81.5 per cent. were living a year after the operation.

As regards the frequency of hernia, no conclusion could be drawn. It seemed to be present in from 6 to 8 per cent. The extraperitoneal Cesarean section seemed less favorable for the development of hernia than the transperitoneal. The scar in the lower portion of the uterus, when formed from tissues brought exactly together, would occasion no danger in subsequent pregnancy. The extraperitoneal cervical method, with open treatment of the wound, had not been followed in any case by the formation of dense adhesions. In 82 per cent. of the extraperitoneal cases, the condition of the uterus, on recovery, was normal. Uterine displacements were not infrequent in these patients, but, as the uterus was freely movable, displacements could be easily corrected.

In reviewing this series, the question arises whether the permanent

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 2.

<sup>2</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxv, Heft 3.

results have been sufficiently good to warrant continuing the operation. He believes that such is the case and that the general results of the operation are good.

**Abdominal Cesarean Section for Eclampsia.** In the *American Journal of Obstetrics*, April, 1914, and in the same journal, June, 1914, Peterson writes upon this subject. In the latter paper he presents the results of 500 cases, with 259 operators. His statistics show that in five years the maternal mortality has been reduced nearly one-half, from 47.97 per cent. to 25.79 per cent.

A fair mortality of abdominal Cesarean section for eclampsia, he estimates at 13.15 per cent. Convulsions ceased after abdominal Cesarean section in more than one-half of the cases. This did not greatly influence the mortality, as 19.8 per cent. of these patients died. The cessation of convulsions is naturally a favorable symptom.

He believes that the operative treatment of eclampsia has never been given a fair trial. To do this, the uterus should be emptied quickly as soon as possible after the first convulsion, and no delay should be practiced to try medicinal treatment. Statistics show that the mortality rises with the number of convulsions. The mortality has also increased with previous attempts at delivery and with the increased age of the patient. Vaginal examinations before operation distinctly increase its mortality. The lack of antiseptic or aseptic precautions in labor is a potent cause of fatal results.

It is not claimed that abdominal Cesarean section is the only, or possibly the best, method of treatment for all cases of eclampsia, but the plea is made for a fair trial of the operation without unnecessary and harmful delay.

At present the three methods of treatment of eclampsia are before the profession for study and adoption. First, is the purely expectant and medicinal method, advocated by Stroganoff, who isolates his patients, gives them at regular intervals doses of morphine, chloral, and bromides, and interferes as rarely as possible, and then only to expedite delivery through the vagina.

The second is the method employed by many American obstetricians, who first treat the eclamptic patient for acute toxemia by bleeding, saline transfusion, irrigation of the stomach, with the ingestion of calomel and soda, and copious irrigation of the intestine. After this, time is given for the patient to improve from her toxemic condition and for labor to develop naturally. When labor begins, it is expedited by the careful and reasonable use of the forceps for the performance of version.

The third method consists in the immediate recourse to Cesarean section, either vaginal or abdominal.

So far as statistics go, the first two show better results than the last. The second method seems to the reviewer the most reasonable, and is

that which he adopts. If, after the toxemia has received adequate treatment, the patient does not come into labor, and does not materially improve, he then delivers her by section, either vaginal or abdominal.

### THE NEWBORN.

**Institutional Mortality of the Newborn.** Holt and Babbitt<sup>1</sup> contribute a paper upon the above subject, based on the report of 10,000 consecutive births at the Sloane Maternity in New York.

They found that the deaths in hospitals during the first two weeks were 3 per cent. of the living births, and, of these, prematurity was responsible for one-half; 48 per cent. of the deaths, and 66 per cent. of the prematurely born children took place on the first day. Of the total deaths, congenital weakness and atelectasis were the causes in 58 per cent.

When the mortality immediately connected with labor is considered, such as the accidents of parturition, hemorrhage, septic infection, and asphyxia, of those dying during the first two weeks but 20 per cent. were lost from these causes. The mortality of the different modes of delivery was as follows:

Normal births, 44 per cent.; version and extraction, 18 per cent.; breech, 17 per cent.; forceps, 13 per cent.; Cesarean section, 1.1 per cent. Craniotomy was performed only on the dead fetus, and these were 4.6 per cent. of the total fetal deaths. In 48 per cent., the fetal heart could not be heard when the mother was admitted to the hospital, and hence the child was supposed to be dead. In 57 per cent., the heart beat of the child was not heard during labor. In 37 per cent., the fetus was macerated.

Syphilis was the cause of death in 4 per cent., and malformations and congenital disease in 4 per cent.

When the causes of fetal death not pertaining strictly to the methods of delivery are considered, we find that difficult labor, prolonged labor, placenta previa, prolapsed cord, cord around the neck, and accidental hemorrhage, caused the death of 45 per cent. The toxemia of pregnancy was responsible for 14 per cent. of the deaths.

When the macerated fetuses are considered, the mortality of syphilis rises from the 4 per cent., already stated, to 9 per cent. Prematurity was responsible for 4 per cent. of the deaths; monsters alone for 2 per cent.; while in 21 per cent. the cause of death remained unknown.

The only important disease developing after birth was pneumonia.

One of the most important problems in infant mortality is that of stillbirth. This caused the death of one and a half times as many infants as all the other causes operating during the first two weeks after

<sup>1</sup> Journal of American Medical Association, January 23, 1915.



birth. Aside from syphilis, the causes of stillbirth do not differ from those which brought about death during the first days of life.

The mortality among the newborn can be reduced by giving the mothers the best possible care during pregnancy, which should greatly lessen congenital weakness in the child. The large number of stillbirths and deaths from causes connected with labor itself should be reduced by improvement in obstetric practice.

While the percentage of stillbirths at the Sloane Hospital was 4.29 per cent., in the city of New York it was 4.65. When it is taken into consideration the number of difficult cases of labor that are sent to hospital, the small number of stillbirths at the Sloane Hospital is a favorable showing. In very nearly an equal number of cases in the University Frauen-Klinik at Munich the percentage of stillbirths was 5.22.

**The Wet-nurse in Hospital Practice.** Churchill,<sup>1</sup> in the Children's Memorial Hospital in Chicago, has tried to employ wet-nurses. They are obtained from the headquarters of the Salvation Army. Each brings her own child, and both are thoroughly examined, including a Wassermann test. The mother is paid \$30 a month, room and board, and does general work about the hospital. She nurses her own child every four hours, usually from one breast. The other breast is pumped the alternate four hours and the milk fed by bottle to the ward babies, these not being placed to the breast for fear of conveying infection. Premature babies were given exclusively breast milk; the others were given mixed feeding, partly human and partly bovine milk. The milk from all the nurses was mixed unless there were children with peculiarly weak digestions, when the child was given to one especial wet-nurse.

The quantity furnished varied from 8 to 10 ounces daily, to 16 and 60 ounces daily; and 16 ounces should be an average quantity. The supply of milk increased as the patients remained in the hospital and were given proper nourishment and good care. Wet-nurses were able to go on from nine to ten months, the maximum being thirteen months. They usually came to serve as wet-nurses when the child was four weeks old.

If the infants were divided into two groups of an unequal age and weight, the older and heavier fed exclusively on cows' milk, the lighter and younger on part human and part bovine milk—the mortality rate of the two groups was practically the same. When, however, infants of the same age and weight were fed partly on breast milk, the mortality rate was lowered 8 per cent.

When the children were seriously but not hopelessly ill, with partial breast-milk feeding the mortality was 3 per cent.

<sup>1</sup> Journal of American Medical Association, November 21, 1914.

The use of a limited supply of breast milk in a large hospital, for three years, did not reduce the infant mortality during that time. The mortality had not increased in the hospital, although outside, and in the surrounding population, it is very considerably increased.

**Care and Feeding of Incubator Infants.** Grulee<sup>1</sup> quotes the statistics of Kerness regarding the mortality of the newborn, showing that of those dying in the first week three-fourths were premature. He reports 8 premature infants ranging in weight from 2 pounds 1 ounce, to 3 and 4 pounds. For their care, electrically heated incubators were employed until the temperature was never below 94° F.

A study of the deaths in premature children shows that the mortality increases in proportion as the child lacks heat.

Each child was given an oil bath daily and was bandaged with gauze bandages in cotton. The infants were disturbed only for feeding and water. In the very early stages gavage was used for feeding, and no child was fed more often than every four hours. As soon as this was put in operation, it was observed that regurgitation ceased, overfeeding was prevented, and digestion was much better. The child was not disturbed too frequently, and attacks of cyanosis were rare in this series. Albumin milk was used in some of the cases, and attention is called to the fact that colostrum is rich in protein, but poor in sugar and fat.

**Pemphigus in the Newborn.** Cole and Ruh<sup>2</sup> had the opportunity to observe an epidemic of pemphigus in the newborn. The series consisted of 9 cases, in which it was possible to isolate the staphylococcus aureus in pure culture in all cases in which unbroken vesicles were to be found. The epidemic started in a typical case which later became dermatitis exfoliativa.

There is a radical difference between contagious pemphigus caused by streptococci and that variety which most often attacks the newborn. It may be sharply distinguished from infantile pemphigus because of the different bacteriological origin. In severe epidemics the infantile mortality is from 25 to 50 per cent., but the autogenous vaccine, in the writer's experience, gave good results.

**Ophthalmia Neonatorum: Its Prophylaxis and Treatment.** Tassius,<sup>3</sup> among 13,735 cases of labor, observed ophthalmia neonatorum in 168 cases, or 1.22 per cent. These could be divided into two groups: one with positive, and one with negative gonococcus reaction.

In the first, where gonococcus was demonstrated, there were 58 cases, or 0.42 of 1 per cent. In the second, where the gonococcus could not be demonstrated, there were 110 cases or 0.8 of 1 per cent.

The writer believes that most statistics give too small a number of

<sup>1</sup> Surgery, Gynecology and Obstetrics, February, 1915.

<sup>2</sup> Journal of American Medical Association, October 3, 1914.

<sup>3</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 5.

negative cases in their report. Both sorts of ophthalmia present much the same macroscopic appearances, so that often microscopic examination only can make the diagnosis. In both, there are swelling of the lids, redness of the edges, redness of the conjunctiva, and seropurulent secretion which may be found upon the external portions of the lids. The bacillus coli communis, the staphylococcus, streptococcus, and pneumococcus, may cause non-gonorrheal ophthalmia. Of these, the most obstinate is that produced by the pneumococcus. The non-gonorrheal cases usually develop in from six to seventeen days after birth, without involvement of the cornea.

In treatment, 0.1 of 1 per cent. sublimate solution is used in irrigation, with boric salve upon the lids. In two cases in which infection was produced by the staphylococcus and bacillus coli communis, a 5 per cent. sopholin solution, used by irrigation every two or three hours, acted favorably and promptly.

The cases of non-gonorrheal infection developing early are usually mild and yield readily to treatment.

The gonorrheal cases are much more severe, and comprise from 0.02 to 0.01 of 1 per cent. of the whole number. The late development of gonorrheal ophthalmia may be assigned to the prolonged period of incubation of the gonococcus.

The indirect conveyance of the infection is observed in clinics where the crib of the child is near the bed of the mother, so that at night the mother may readily touch the face or eyes of the child while endeavoring to soothe it. When, however, mothers and children are separated, some other explanation must be found. It seems most reasonable to ascribe these cases to a prolonged period of incubation in the germ. The gonococci may remain in the glands of the eyelid, especially in the Meibomian glands.

Regarding treatment, the writer has employed the prophylactic use of 2 per cent. and 1 per cent. solution of nitrate of silver, and, in a series of 21 cases, 3 per cent. of sophol. The results seemed identical. With 2 per cent. solution of silver nitrate as a prophylactic, the number of cases developed were 0.29 of 1 per cent. With 1 per cent. silver nitrate 0.31 of 1 per cent., and with sophol 0.33 of 1 per cent.

In 523 cases the eyes were very thoroughly but carefully cleansed with sterile water, and in these 523 there were 3.23 per cent. of ophthalmia, with positive detection of the gonococcus.

When silver preparations were used, catarrh of the conjunctiva was observed in 95 per cent.

The writer could see no difference between the so-called secondary irritation symptoms and those of catarrhal conjunctivitis. In the catarrhal cases, he had observed no permanent bad results. He believes that the cause of the catarrh is to be found in the composition of the silver itself, which undergoes some decomposition, liberating free



nitric acid. By the use of saphol, the catarrhal cases numbered 35 per cent. of a very mild degree. The writer considers 1 per cent. solution of silver of nitrate as the most efficient and practical prophylactic agent.

CONTAGIOUS OPHTHALMIA IN THE NEWBORN. Asch, Bondy, Frankel,<sup>1</sup> and others, at a meeting of the Obstetrical Society in Breslau, drew attention to the different varieties of gonorrheal ophthalmia, varying greatly in virulence and in contagion also. In the use of the preparation known as *sophol*, irritation resulted in 1 per cent. In over 5000 children treated with a 5 per cent. solution, but 0.29 of 1 per cent. developed gonorrheal ophthalmia. The limit between the early and the later infection may be placed at five days after birth. When gonorrheal ophthalmia developed as late as the eighth day, it was called "late infection," and this occurred in 0.31 of 1 per cent.

Reinhardt<sup>2</sup> reports an epidemic of contagious pemphigus in Kehrers Clinic in Dresden. The cases numbered 23, with three deaths immediately caused by pemphigus, and one from pneumonia, in which the typical lesions were present. He calls attention to the differential diagnosis between pemphigus and syphilis, which can be cleared up by the presence or absence of the spirochete pallida. It will also be remembered that in syphilis the eruption is on the hands and soles of the feet.

He does not believe that we have yet isolated the one germ causing pemphigus. The staphylococci, streptococci, diplococci, gonococci, and bacillus pyocyaneus, have all been observed.

His paper is well illustrated.

RETENTION OPHTHALMIA IN THE NEWBORN. Sussman<sup>3</sup> states that in all cases of inflammation of the conjunctiva in the newborn the gonococcus is the cause in 50 per cent. There exists, however, a distinct class of cases where one finds the protoplasmic bodies which are present in trachoma. When the tissues in these cases are stained dark blue, nuclei resembling micrococci are demonstrable, and these bodies have been termed chlamydozoen. Since the discovery of this condition it has been observed in regions where trachoma was present, and also where trachoma was absent, in Germany, Austria, France, Russia, and America.

Those who have studied the subject think that these bodies are present in almost one-half of all cases of conjunctival irritation. While mixed infection may occur, it is rare.

When this material was inoculated into the eyes of an ape, after the usual incubation period of from five to seven days there occurred

<sup>1</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xxxix, Heft 6.

<sup>2</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 1.

<sup>3</sup> Ibid., Band lxxv, Heft 3.

characteristic lesions which resembled human trachoma very greatly. This condition was communicated from one animal to another. Similar appearances were produced when the material used for inoculation was taken from the genital tract of a mother of an infant showing this condition. Similar results were also observed in studying the human subject in infectious material taken from the urethra of the father. In the adult human individual, this inoculation produced after seven days granular conjunctivitis.

It seems probable that trachoma and retention conjunctivitis are etiologically the same, and that there is such a condition as trachoma produced by infection with material taken from the genital tract.

As regards the period of incubation, different observers give it from five to nine, and from five to ten days.

The symptoms of the disease are swelling of the lids, and redness and swelling of the conjunctiva with secretion. In the acute stage this is yellow and serous, or mucoid or purulent. It is not, however, so abundant or so thick as in gonococcal infection. The conjunctiva is intensely red, and sight is temporarily lost. In some cases, membranous tissue forms. This acute stage is followed by one of papillary swelling with diminished secretion which may persist for weeks or even months. The cornea remains intact throughout the disease, and, so far, no case has been reported in which the cornea was involved.

The prognosis is good.

As regards the simple conjunctival catarrh of the newborn, characterized by moderate secretion, little swelling, and redness, with no tendency to infection, while the tissues of the eye remain clear, so that the Meibomian glands can be made out, this is in no way to be considered as a retention conjunctivitis.

The writer's investigations would seem to show that the virus of gonorrheal ophthalmia may be retained in the conjunctiva, or in the conjunctival tract of the parent, and undergo changes in virulence which produce lesions resembling those of trachoma, but they are not typical of acute gonorrheal infection.

Among the interesting works published recently upon this subject is a book entitled *Suppurative Disease in the Eyes of the Newborn*, by Credé-Horder. In this, the original work of Credé is dwelt upon at length, and his studies in the prophylaxis of ophthalmia in the human subject and in animals are described.

Attention is drawn in the book to what is called cases of late infection.

Regarding the question as to whether gonorrheal infection can attack the eyes of the fetus, the authors of the book are inclined to doubt it; while, on the contrary, other observers believe that such is possible. In the observation of the reviewer, children have been born with acute gonorrheal ophthalmia.

**The Closure of the Ductus Arteriosus.** Linzenmeier<sup>1</sup> contributes a paper of considerable length, and reviews the literature of the subject. He adds several instructive illustrations.

He does not believe that any previous theory concerning the closure of this duct is thoroughly satisfactory. He believes that many factors are necessary, not all of equal importance, and that, until all have been accurately understood, a satisfactory explanation cannot be given. He thinks the most important is the partial kinking at the mouth of the duct, caused by the increased action and altered position of the fetal heart. The muscular tissue in the duct itself has a considerable influence in bringing about this phenomenon.

**Hunger Fever in the Newborn.** Mayer<sup>2</sup> describes the phenomenon known as hunger fever in the newborn, accompanied by rapid loss in weight, rise in temperature for a short time, in a lack of development of any other diseased condition, and the immediate return to nutrition as soon as the fever is over. The cause he believes to be in the quality and quantity of the nourishment given. In the first days of life the child that nurses receives a food which greatly resembles and contains the same elements of the maternal blood, and the result of the absorption is the occurrence of fever.

As regards the quantity of nourishment, he believes that the lack of a proper amount of water taken by the child is quite as important as the lack of milk; there is also a lessening in the quantity of urine excreted.

In discussion, Asch reported the case of a child born weighing 5300 grams. During the first thirty-six hours of life it lost 740 grams; then followed a further loss of 110 grams. With this developed fever on the third day after birth, reaching 103.5°. The period of fever lasted four days.

It was curious to observe that cold packs had no influence upon the fever.

**The Anatomy of the Ileocecal Region in the Newborn.** Valtorta<sup>3</sup> publishes an article accompanied by some excellent illustrations upon this subject. He shows the appendix in typical mid-position with its base emerging from a broad sheet of adhesions. He also draws attention to the fact that the appendix may be beneath the brim of the pelvis, and that the base of the appendix may be constricted at the pelvic brim.

Another case described was that in which the appendix was found coiled at the brim of the pelvis and behind the cecum.

As an illustration of an extraordinary situation of the appendix, he describes a case in which it was found buried in adhesions beneath

<sup>1</sup> Zeitschrift f. Geburtshülfe und Gynäkologie, 1914, Band lxxvi, Heft 1.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 1.

<sup>3</sup> Annali di Ostetricia, 1914, No. 5.



the liver. Under the term "parietal bridle," he describes and illustrates a case in which the appendix was twisted upon itself and held above the pelvic brim in the iliac fossa by a bridle of peritoneum. A loop of appendix with the base bound down, and the appendix adherent to the ovary, are also described.

**A Study of the Thorax in the Newborn.** Maurel<sup>1</sup> has studied the thorax of the newborn, and tabulates his results in a series of measurements. He finds that, on section, the thorax of the newborn is almost circular in outline. Although usually the thorax presents no difficulty to the birth of the child, in cases in which the child is excessively large, difficulty and danger might arise. The great mortality of male children during labor and for some days after birth can be explained by birth pressure, as the male child often has a considerably better developed thorax than the female child.

**The Treatment of Premature and Feeble Children by the Use of the Incubator.** Betke<sup>2</sup> gives the results of his observations upon this subject in the children's clinic in the Charité at Berlin.

He finds that the prognosis for these children is exceedingly bad. When, however, their mortality is compared with that of other newborn children there is not such a great difference between the two. He finds it of especial importance that the child has a warm temperature from the moment of its birth and that it does not become chilled. He believes that in the larger incubators, holding several children, disorders of the respiratory organs are less common, and the danger of sudden overheating of the incubator is much less. So far as the further development of these children is concerned, it cannot be shown that their vigor or growth in the later years of childhood is less than that of other children.

**Spontaneous Rupture of the Spleen in the Newborn.** Heinrichsdorff<sup>3</sup> describes the case of a child dying two days after birth. The labor was normal and without especial difficulty, and nothing happened which seemed to endanger any organ of the body. There were no efforts made to resuscitate the child. The child had no disease of an acute type which should have caused enlargement of the spleen before birth. There was no leukemia, and the only assignable cause for the large size of the spleen was congenital syphilis.

A postmortem examination was made. There was hemorrhagic fluid in the abdomen, showing that a severe hemorrhage must have taken place. The spleen was greatly enlarged. On the anterior border and at right angles to it there was a tear in the capsule of the spleen 4 cm. long. The greater part of the hemorrhage, however, had come from another laceration 4.5 cm. long on the posterior border of the spleen.

In these cases a serious condition is made evident by the progressive

<sup>1</sup> Arch. mens. l'Obstétrique, June, 1914.

<sup>2</sup> Monatsschrift f. Geburtshülfe und Gynäkologie, 1914, Band xl, Heft 2.

<sup>3</sup> Ibid., Heft 3.

weakness of the child and with some rise of temperature. The symptoms develop gradually, and the attention of the physician may not be called to the case until too late. Should the injury be known immediately after birth, the effort should be made to remove the spleen.

**Tubercular Infection in the Female Genital Organs in Children.** Graefe<sup>1</sup> finds, on comparing the frequency of tuberculosis in children, that tuberculosis in the genital organs of female children is comparatively rare and less frequent than in adults. It is most often seen between the first and fifth, and tenth and fifteenth years. The cause for the tuberculous disease can usually be found in some old tuberculous focus in some other portion of the body, so situated as to be near or directly upon the large bloodvessels. The process begins in the superficial layers of the mucous membrane, and penetrates to the subjacent tissues, causing caseous deposits, but never the formation of connective tissue. The process usually begins in the Fallopian tubes, thence extending to other portions of the genital tract which are in relation with the tubes through the blood supply. It is much more common for the tubercular disease to extend from the tube to the peritoneum than from the peritoneum to the tube. It is very rare for this disorder to begin primarily in the vagina or vulva, or from some portion of the urinary organs.

**The Nourishment of Newborn Children.** Jaschke,<sup>2</sup> in the clinic at Giessen, has tried the plan of having infants nursed five times in twenty-four hours, with an interval of eight hours at night during which the mother is not disturbed. He was led to try this through the exigencies of the clinic, where from thirty to forty infants must be cared for with a limited number of nurses. If nursing was to be conducted under the supervision of a competent nurse, and the nipples given antiseptic care, it was found impossible to carry this out if the child were nursed every three hours. The experiment of five-hour nursing was tried originally with the hope of securing attention to each nursing with antiseptic care. The results were so satisfactory that Jaschke advocates this plan with nursing children.

Rietschel,<sup>3</sup> in the City Hospital at Dresden, has tried the same plan with considerable success. He believes, however, that in the houses of the poor, where the mother acts without supervision, that she will nurse the child more frequently, and that three-hour nursing, or six to seven meals in twenty-four hours, will be the rule.

He compares the results obtained in Jaschke's Clinic with those of other institutions, and finds that while at first children receiving the five nursings lose considerably, that later the loss ceases and gain soon begins.

<sup>1</sup> *Monatsschrift f. Geburtshülfe und Gynäkologie*, 1914, Band xl, Heft 5.

<sup>2</sup> *Zeitschrift f. Geburtshülfe und Gynäkologie*, 1914, Band lxxv, Heft 3.

<sup>3</sup> *Ibid.*

**Clinical Manifestations of Congenital Syphilis.** Armstrong<sup>1</sup> calls attention to the report of the Royal Commission on Venereal Diseases, which emphasizes the frequency of congenital syphilis. Armstrong agrees with the report of this Commission that there is no reduction in the frequency of congenital syphilis, but that the disease appears to be less severe. Cases in which newborn infants die shortly after birth, with extensive necrosis, are now comparatively rare; so necrosis of the bones is seen less frequently than formerly. On the other hand, parasyphilitic disease, such as tabes, general paralysis, and cerebral syphilis, seem to be on the increase.

As regards tests for the disease, the Wassermann still remains reliable in the great majority of cases. Noguchi's luetin has been used to some extent at the Babies' Hospital in New York, and the results have been reported by Brown.<sup>2</sup> By this test, some unsuspected cases were demonstrated, while, in some cases known to be syphilitic, the test was negative. This coincides with Armstrong's experience with the von Pirquet test.

In late syphilis, in which the Wassermann reaction is given by the cerebrospinal fluid, but not by the blood serum, the luetin test is thought to be the more reliable. While the original Wassermann reaction is complicated and expensive, and sometimes difficult to apply in infancy, it may be readily used with the mother, and, if her blood gives a positive result, it is fair to conclude that her offspring is syphilitic. Occasionally the newborn infant may give the reaction, and yet never develop symptoms, probably because at birth it had absorbed substances from the placental circulation without actually becoming infected. Some infants with marasmus never give a positive Wassermann reaction, although undoubtedly syphilitic, and here the condition is more one of toxemia than an acute process. Such are not examples of true congenital syphilis, and are seen in cases in which the disease in the parent has been of long standing.

It is said that from 5 to 10 per cent. only of infants born of syphilitic mothers survive the first year of life. Abortions and miscarriages are known to be exceedingly common among these patients. In some, a series of miscarriages precedes the birth of a monstrosity in which the bones of the cranium may be lacking in ossification, meningo-encephalocele being present, with hare-lip, cleft palate, absence of the eye, absence of the eyelids, webbing of the fingers or toes, and constriction of the limbs.

While it is usually not difficult to detect the ordinary syphilitic rash, there are two conditions seen in infants which may be wrongly diagnosed as syphilitic: The first is what is known as pemphigus neonatorum, but is not a genuine pemphigus, but an eruption caused by streptococcic infection of the skin. It is much more like impetigo contagiosa. Occa-

<sup>1</sup> British Medical Journal, May 2, 1914.

<sup>2</sup> American Journal of Diseases of Children, 1913, p. 171.



sionally, in newborn infants, a bullous syphillide is observed. This is present at birth always upon the palms of the hands and the soles of the feet, and rapidly changes to the raw ham color. This pemphigoid eruption occurs after birth, and may also be upon the dorsal surface of the extremities. This eruption indicates a severe infection.

Eczema seborrheicum may also be mistaken in infants for congenital syphilis. The characteristic scaly, greasy, yellowish eruption, which is usually seen on the scalp and in the folds of the face, may not closely resemble syphilis; but when the disorder is found upon the thighs and abdomen and about the urethra and bowel, the tissues may be so irritated by discharges retained in the diaper that the characteristic lesions are obscured. The inflamed, moist, oozing surface, dark red in color, may strongly suggest syphilis. The infant with eczema, however, may be comparatively well nourished and show no lesions upon the hands or feet. The rash will be found in other parts of the body covered with scales.

Bosanyi<sup>1</sup> describes 2 cases in which Raynaud's disease affected the right hand and both feet in one case, and both hands and feet in the other, and occurred in infants having congenital syphilis. Cases of severe gangrene of the lower extremities are also reported in which syphilis was finally diagnosticated, the patient improving under antisyphilitic treatment with antiseptic fomentations locally.

During the first portion of infancy, condylomata and laryngitis are frequent consequences of congenital syphilis. The writer describes the case of an infant, aged fifteen months, ill two weeks with laryngeal cough and a hoarse cry. Under potassium iodide, the child rapidly recovered. Occasionally, the disease is associated with interstitial pneumonia.

Hemoglobinuria, nephritis, and edema, may also be referred to congenital syphilis. In syphilitic disease of the nervous system, basal meningitis is usually the first sign apparent.

To establish a positive diagnosis, lumbar puncture should be performed, and the cerebrospinal fluid examined. If the fluid does not give the Wassermann reaction, it may be obtained from the blood. In some cases among infants, the characteristic symptoms of syphilis of the nervous system are well developed.

**Melena Neonatorum.** Kaufmann,<sup>2</sup> from the clinic in Breslau, describes a third case of melena observed in the clinic during the last three years among 4000 cases of labor.

The mother of the child was a primipara, aged twenty-eight years, previously healthy, the labor normal. The child, a male, seemed healthy at birth, had no asphyxia, and nursed well. On the second day, icterus developed, and, on the fourth day, a bloody discharge from the bowel. This was repeated until the child became very pale and much prostrated. Twenty centimeters of sterile gelatin solution was injected into the

<sup>1</sup> Jahrb. f. Kinderheilk., lxxviii, p. 177.

<sup>2</sup> Monatsschrift f. Geburtshilfe und Gynäkologie, 1914, Band xxxix, Heft 3.

muscles of the back and the child placed in an incubator. Another hemorrhage occurred, but on the next day the discharge from the bowels was normal. On the evening of the first day of the disease, the child's temperature was 104° F. This condition lasted only two days. The child lost in weight up to the ninth day after birth, when it began to gain, and continued to do so.

In discussion, Jüster recalled a case of melena neonatorum in which an ulcer in the duodenum was found to be the cause of the fatal attack. Melena and hemophilia have by some been considered practically identical.

As regards the *treatment*, gelatin is repeatedly useful and should be administered as soon as the disease manifests itself. Where this does not suffice, diphtheria antitoxin may be tried, human serum, horse serum, or defibrinated human blood. As a last resort, direct transfusion may be practised.

**Medical vs. Surgical Treatment of Pyloric Stenosis in Infancy.** Holt<sup>1</sup> has had experience with 57 cases of pyloric stenosis in infants, 18 in private practice and 39 at the Babies' Hospital in New York. As the number of cases is increasing, the conclusion is natural that the disorder is more frequently recognized.

This disease usually occurs in breast-fed infants and is more frequent in male than in female children. No reason can be assigned for this fact.

The first definite symptoms usually begin in the third, fourth, and fifth weeks, and in only two cases were they present in the first week of life. The onset is abrupt, with forcible vomiting. This abrupt development some weeks after birth, and the fact that many cases completely recover, point to pyloric spasm, as the condition present.

At autopsy, marked hypertrophy of the pylorus involving the circular muscular layer has been found, and to this the stenosis may be ascribed.

Some have sought to divide the cases into two classes—the hypertrophic and purely spasmodic. This distinction cannot be sharply made. Holt does not believe that definite persistent spasm of the pylorus has yet been demonstrated without hypertrophy.

In 26 autopsies under his observation, a firm, hard, cartilaginous tumor was present. The cases may be divided into mild and severe, beginning with forcible vomiting, with marked constipation, loss in weight, and failing nutrition. Definite gastric peristaltic waves can be demonstrated, and a palpable tumor about the size of a peanut can be outlined in the pyloric region. In some cases the symptoms steadily abate, and the child slowly regains its health in several months. In other cases, the child dies of failing nutrition.

In diagnosis, it is important to measure the amount of gastric retention. This is done by feeding a measured quantity, and emptying the

<sup>1</sup> Journal of the American Medical Association, June 27, 1914.

stomach by aspiration three hours afterward. In Holt's experience, this is more valuable than examination by the  $x$ -ray. The fact that small quantities of fecal matter pass, does not prove that the condition is not present. Emaciation frequently amounts from 1 to 2 ozs. daily.

The medical treatment consists in careful feeding, and in stomach washing, the latter twice daily. Breast milk should be given as food, and one not rich in fat is essential. From 1 to 3 ozs. at three or four hour intervals, and water in small quantities between feedings, should be given. Hypodermoclysis is used in prostrated patients. Drugs are of no value; and the bowels should be moved by enemata. These cases require careful watching and should be weighed daily.

Holt believes that surgical treatment is preferable, as the greater number of patients recover. After operation, hypodermoclysis should be used; breast milk should be given as food, two teaspoonsful every two hours, gradually lengthening the intervals and increasing the quantity; a teaspoonful of castor oil should be given at the end of thirty-six hours. The child's bed should be inclined at an angle of 135 degrees or more, the head being raised. The child is kept in this position four or five days.

**The Treatment of Hemorrhagic Disease of the Newborn by Direct Transfusion of Blood.** Lespinasse<sup>1</sup> reports, in tabulated form, 14 cases of hemorrhagic disease of the newborn treated by direct transfusion of blood.

He finds the pathology of the condition obscure, as in many cases no lesions except hemorrhages were present at autopsy. In some, syphilis, enlarged spleen or liver, and inflammation of the umbilical and portal veins, and fatty degeneration of various organs, were present. In some cases a positive, and in other cases a negative, blood culture was present. Spontaneous hemorrhage is the important symptom from the intestine, stomach, mouth, nose, navel, skin, meninges, genito-urinary tract, eyes, and pressure points, such as the heels and sacrum. As the hemorrhage persists, the child gradually fails and dies in coma. The disease usually appears from the second to the fifth day of life, and is more serious the earlier it is observed. In syphilitic cases it is usually observed from the seventh to the ninth days. Death may result suddenly, within twenty-four hours after the first sign of bleeding.

It must be remembered that when hemorrhage occurs from the bowel, the amount of blood passed or vomited does not represent the entire blood loss. The intestine may be full of blood and only part of it ejected. Death may follow in four hours from the discovery of the bleeding.

By computation, it is thought that a hemorrhage of one ounce in a newborn infant is equivalent to the bleeding of one quart in an adult.

The writer believes that transfusion of blood is the best possible treatment. His illustration shows the femoral vein of the child joined to the radial artery of the donor.

<sup>1</sup> Journal of American Medical Association, June 13, 1914.



The change following this treatment is rapid and pronounced. The child gains from 8 to 14 ounces during transfusion, and is usually able to nurse after it is over and to sleep quietly. The temperature drops to normal, the retained blood is passed out of the intestines in a day or two, and the child gains weight normally or more rapidly than usual.

In fourteen days two died of syphilis, one in five days, the other in nine days after transfusion. In one case the child recovered  $14\frac{3}{4}$  ounces of blood by weight, and in another twenty-four hours after transfusion the child gained 15 ounces. To confirm this, a dog weighing  $7\frac{1}{2}$  pounds, without preliminary bleeding was transfused from a dog weighing 15 pounds, during five and a half minutes. At the completion of the transfusion the recipient had gained 18 ounces. The donor was practically dead. The recipient showed a plethoric condition from which it gradually recovered. After transfusion, fresh blood disappears from the bowel movements, although old blood comes away gradually.

In using the treatment, care should be taken that transfusion is not too rapid. Should this occur there will be temporary dilatation of the heart, and the child will become blue about the face and extremities. When this occurs the transfusion should be stopped until a red color returns. In 10 of the cases, the father was the donor, a mother's half-sister in one, and a non-relative in 3. In 7 cases the radial artery was used, and a forearm vein in 7 cases from the donor. In babies, the femoral vein was used in 4, and the jugular vein in 10.

The duration of the transfusion varied from five to fifteen minutes. In one case the father fainted, reducing his blood-pressure so low that it took longer to convey the blood to the child.

Including his own, the writer has collected 37 cases, with 34 recoveries and 3 deaths. The 3 deaths occurred in syphilitic infants.



# DISEASES OF THE NERVOUS SYSTEM.

By WILLIAM G. SPILLER.

**Brain Tumor.** RESULTS FROM OPERATIONS. I cannot omit a reference here to the important paper by Cushing<sup>1</sup> on the results of operations for brain tumors, and yet I do not know how to present his remarks in a condensed form. Anyone interested in the subject will want to read the entire paper if he has not already done so. Cushing shows how difficult it is to judge of the results of operative procedure, because so many factors must be considered. The character of the tumor, the position of the tumor in the brain, the operative technique, the radical or palliative measures; these, and other factors, must be considered in judging of the results of surgical treatment of tumors. He urges that tumors of different locations should be treated separately when statistics are made, as he has done for tumors of the hypophysis. His experience comprises 334 cases in his Baltimore tumor series, and 142 cases observed in Boston during eighteen months. His statistics should be read in his paper, but I may here emphasize his results on cerebello-pontine tumors. During ten years he has had 13 of these cases certified by operative exposure, and 17 cases in which the diagnosis was made but in which only a decompression was done. None of the 17 cases were fatal. There were four fatalities in the 15 operations on the 13 patients; one of them from pneumonia, and the three others from bulbar symptoms after more or less extensive fragmentary enucleations; a mortality of about 30 per cent.

**ANGIOMA OF BRAIN.** It is indeed a pity that a tumor of the brain so seldom is an angioma, as the results of operation might be different. In the case reported by Castex and Bolo,<sup>2</sup> symptoms of a lesion of the left motor region had been present for about four years, and an operation was performed at this location. The pia was found to be very vascular and the veins formed a dense network. These were tied at the limits of the field of operation, and in doing this a few veins were ruptured and bled so freely that the hemorrhage was arrested with difficulty. The results were all that could be hoped for, and all symptoms disappeared except a slight weakness of the right lower limb. The lesion was regarded an angioma racemosa venosa. It is stated that the patient was dismissed from the hospital seven months after the operation entirely well.

<sup>1</sup> Journal of the American Medical Association, January 16, 1915, p. 189.

<sup>2</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. lii, nos. 5 and 6, p. 356.



**METASTASES FROM PITUITARY TUMOR.** A very extraordinary case of tumor metastases is recorded by Roussy, Mason, and Rapin.<sup>1</sup> An epithelioma of the pituitary body caused numerous metastases, especially to the bones. A tumor of the pituitary gland is not likely to cause other growths, but simply destroys the parts where it originates. Such metastases as these authors describe seem to be unknown in literature. Tumors arising in the thyroid gland, called by the Germans adenoma malignum, and by the French goitre métastique, presenting the appearance of typical adenoma, are liable, however, to cause numerous metastases, especially to the bones. It is important to know that pituitary tumors in rare instances may have the same characteristics.

**TUMORS OF THE HYPOPHYSIS SIMULATING TABES AND PARESIS.** The following case was presented to Oppenheim<sup>2</sup> for a diagnosis: A man, aged thirty-eight years, had observed that his sight was failing in both eyes; then his sexual powers became affected, and the diagnosis of tabes was made. Ophthalmological examination revealed bilateral optic nerve atrophy, the pupillary reflex was lost on the left side, but not on the right side, and the tendon reflexes of the lower limbs were lost. There was sufficient in all this to suggest tabes, but more careful examination showed that the man was fat, especially in the face, and the adiposity had increased during the two previous years; that he had no hair on his face, or in the axillæ, and little about the sexual organs, and that the mammillary glands were of the feminine type. Inquiry elicited the information that hemianopsia had existed, and this had progressed to amaurosis of the right eye and to such failure of sight in the left eye that only hand movements were recognized in the left inner field. The x-rays showed enlargement of the sella turcica. The man had not had headache, mental dulness, glycosuria, nor polyuria. These findings permitted the diagnosis of tumor of the hypophysis. Operation resulted fatally, and an adenocarcinoma of the hypophysis was found. Oppenheim reports a second similar clinical case, and states that he has seen others, and that some investigators have described the combination of acromegaly and tabes. He reports a case of tumor of the hypophysis with symptoms that suggested paresis.

It is important to recognize that this form of brain tumor may be mistaken for tabes or paresis. The x-rays will usually make a correct diagnosis possible, but sometimes the primary optic atrophy begins before the enlargement of the sella turcica, and then the x-rays may not be helpful in the diagnosis. It is only occasionally that a hypophysis tumor will simulate tabes, but we wish in these rare cases to be able to make a correct diagnosis.

<sup>1</sup> *Revue Neurologique*, June 15, 1914, p. 783.

<sup>2</sup> *Zeitschrift für die gesamte Neurologie und Psychiatrie*, vol. xxv, nos. 4 and 5, p. 527.

**TUMORS OF THE CRUS CEREBRI.** Rhein,<sup>1</sup> in reporting a tumor located in this part of the brain, states that he has been able to find only 17 similar cases with necropsy in the literature. In 9 of these cases, the hemiplegia was associated with bilateral oculomotor palsy, and in 5 with unilateral oculomotor palsy. He refers to 2 cases in which the hemiplegia and third nerve palsy were on the same side. Tremor of some type was mentioned as occurring in 8 cases; it was choreiform, or rhythmic, or like that of paralysis agitans, or intentional in type. Ataxia and sensory disturbances have been present in some cases. Reduction of temperature and inordinate laughter have occurred.

**TUBERCULOUS MENINGITIS SIMULATING BRAIN TUMOR.** The difficulty in diagnosing between brain tumor and tuberculous meningitis is emphasized in the report of 2 cases of the latter disease by Reichmann.<sup>2</sup> In one case a child, aged four years, had pain in the head and breast, ataxic gait and impaired hearing; he then became completely deaf, and unable to walk and to speak. He had intense ocular palsies, choked disks, choreiform movements, and loss of tendon reflexes, but apparently no loss of consciousness, no rigidity of the neck, fever, nor contracted abdomen. The case did not appear like one of ordinary meningitis, and yet the necropsy revealed a recent basal tuberculous meningitis and intense softening of the cerebral peduncles, causing them to have the consistency of soft cheese.

In the second case of basal tuberculous meningitis the chronic course of the disease, without fever, the severe vomiting, and vertigo, the absence of all bulbar focal symptoms and the presence of bilateral choked disks, suggested cerebellar tumor.

In these 2 cases the characteristic signs of tuberculous meningitis were absent, and the early-appearing choked disks were unusual. It is not surprising that much difficulty was experienced in making the diagnosis.

**Apoplexy. PULMONARY COMPLICATIONS.** Knapp<sup>3</sup> has found that two-thirds of his fatal cases of apoplexy showed some evidence of pulmonary involvement, and it is possible, he thinks, that some patients might recover from apoplexy did not the bronchopneumonia add to the danger. Care should be used in administration of food, there should be frequent and thorough swabbing out of the mouth with mild antiseptic solutions, and the use of antiseptic douches or spray in the nostrils to lessen the danger of oral sepsis from microorganisms entering the lungs. He thinks that such drugs as digitalis, ammonia, and camphor may be given to stimulate the circulation if administered with drugs that lower the blood-pressure, as they sometimes seem to aid. Applications of ice to the back or the epigastrium, or cold douches sometimes

<sup>1</sup> Journal of the American Medical Association, November 7, 1914, p. 1662.

<sup>2</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. lii, nos. 1 and 2, p. 28.

<sup>3</sup> Journal of Nervous and Mental Disease, March, 1915, p. 150.

cause sudden deep inspirations. Great benefit may sometimes be obtained by venesection when the patient has labored respiration, full pulse, high blood-pressure, and marked pulmonary engorgement. The removal of 8 or 10 ounces of blood from the arm Knapp finds occasionally has a most dramatic effect in relieving the symptoms. He has the upper part of the patient's body raised in the bed, with the head fairly high; he has the patient turned from side to side frequently, and when the lung conditions seem threatening, he gets the patient out of bed in a day or two into a chair for a short time, at least once a day, fastening him into the chair, if necessary. Less blood will flow out when the head is higher than the body.

**The Hemiplegic's Ignorance of Paralysis.** It seems strange that a person in possession of his intellect could be ignorant of a severe paralysis of his body, and Babinski's<sup>1</sup> observations on this subject are exceedingly interesting. He has found that patients with cerebral hemiplegia may ignore or appear to ignore their paralysis. He, of course, excludes cases in which intelligence is much enfeebled. One of his patients preserved in a great measure her intellectual and emotional faculties, recalled past events, spoke voluntarily and correctly, was interested in her acquaintances, and had neither hallucinations nor mental confusion. She ignored, however, the almost complete hemiplegia with which she was afflicted. She never made allusion to it. If she were told to move the non-paralyzed upper limb she did as she was commanded, but if told to move the paralyzed upper limb she acted as though she did not hear the command.

Another patient, when asked of what she complained, spoke of pain in the back but never of her paralysis, and she asked why she was to receive electricity, as she was not paralyzed. She had intense anesthesia in the paralyzed limbs. Babinski calls this condition *anosognosia*. When hemiplegics do not ignore their paralysis but attach no importance to it, Babinski speaks of *anosodiaphoria*.

It might be thought that anosognosia is assumed, that the patients are unwilling to acknowledge their paralysis, but such a mental attitude is useless, as the paralysis cannot be concealed. Babinski, however, will not affirm that the paralysis is unrecognized by the patients, but he thinks disturbances of sensation in the paralyzed limbs may play a role.

Meige called attention to the rapidity of the loss of the knowledge of movement in hemiplegia, what he calls *amnésies motrices fonctionnelles*, and this may be important in Babinski's anosognosia.

**Posthemiplegic Pseudomyotonia.** This little-known condition was observed in a case by Quensel.<sup>2</sup> The hemiplegia was on the left side, and was only partial palsy. When the man grasped anything with the

<sup>1</sup> Revue Neurologique, June 30, 1914, p. 845.

<sup>2</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. lii, nos. 1 and 2, p. 80.



left hand, the hand went into spasm, so that the fingers were partly in flexion, partly in extension, but the spasm was of short duration. The left upper limb was freely movable at all parts. Vigorous grasp with the left hand quickly caused spasm in the flexors of the hand and forearm for a few minutes, and the tendon reflexes of the limb were lost during the spasm but exaggerated later. An attempt to pick up any small object with the left hand caused transitory spasm of the fingers. Pressure over the nerve trunks of the left arm caused spasm like that of tetany, but this sign disappeared. It is recognized that myotonia may be associated with some of the signs of tetany.

Myotonic spasms have been observed in syringomyelia, myelitis, and Friedreich's disease; also in hemiplegia (Hitzig and others). They have been seen frequently in paralysis agitans according to Quensel. The explanation is not easy to find. Kleist attributes myotonic spasms to implication of the frontopontine tract, and a lesion at the inner part of the foot of the cerebral peduncle would implicate this tract. Such a lesion probably existed in Quensel's case.

**Léri's Sign in Hemiplegia.** This sign is briefly described in an abstract appearing in the *Journal of the American Medical Association*, August 1, 1914. The abstract is taken from an Italian paper. This reflex is elicited in the forearm when the arm, hanging relaxed, is sustained by the investigator's left hand under the wrist, while with his right hand he rolls up the fingers and the hand on the forearm. As this is done the forearm bends as if drawn by an elastic cord. This is the physiological reflex and it may disappear in case of an organic lesion anywhere along the reflex route.

Vidoni states that he tested 301 patients in an asylum for this reflex, the results confirming Léri's statements in every particular. He found it impossible to elicit the reflex in any case of organic hemiplegia.

**Double Monoplegia.** The diagnosis of double monoplegia from two distinct lesions in the motor cortex of the same side needs the authority of one like Dejerine for its justification. A case of this kind is reported from his service by Regnard, Mouzon, and Laffaille.<sup>1</sup> A woman, aged twenty-six years, had paralysis confined in the right upper limb to certain muscles of the hand and wrist. In the right lower limb certain muscles of the foot and leg below the knee were paralyzed, but flexion and extension of the leg at the knee and movements of the thigh were normal. The monoplegias were thus confined to the extremities of the two limbs. Cortical lesions were regarded as certain. The peripheral nerves could not be affected on account of exaggeration of tendon reflexes of the limbs, Babinski's sign, and absence of disturbance of sensation. A lesion of the spinal cord was improbable. The lesion was supposed to be syphilitic meningitis, causing disseminated plaques. In

<sup>1</sup> Revue Neurologique, June 30, 1914, p. 838.

confirmation of this view, were sixth nerve palsy and improvement under mercurial treatment.

**Cerebral Diplegia.** Severe jaundice of the newborn child has not received attention as a cause of spastic cerebral diplegia, but from some observations I have made<sup>1</sup> I have concluded that it may play an important role. The mild icterus neonatorum need not be considered. In some instances the jaundice is severe, and, as this indicates a profound alteration of the metabolism, it is not unreasonable to believe that the effect on the delicate nerve cells of the brain in the newborn child may be serious. Intracranial hemorrhage is possible from some abnormal condition of the blood, as shown by a remarkable family studied by Pitfield. Recent studies of pseudosclerosis in adults have led some investigators to believe that this disorder of the brain may be related to disease of the liver, and so far does Bostroem go that he states that the changes in the nerve cells of the brain and the overgrowth of neuroglia, as well as alteration of the liver occurring in pseudosclerosis, are certainly caused by intestinal intoxication, depending on a functional disturbance of the gastro-intestinal tract. The peculiar condition of the liver, he says, certainly is caused by an enterogenous toxin, although other causes may assist the gastro-intestinal condition in producing pseudosclerosis. I have observed 4 cases of cerebral diplegia in which severe jaundice was believed by the parents to have been the cause of the diplegia. It is to be hoped that attention may be directed to this possible cause and some means may be found for combating it; indeed, in one of Pitfield's cases, injection of blood serum from another person apparently arrested the jaundice.

**Occlusion of the Posterior Inferior Cerebellar Artery.** It is seldom that occlusion of this artery causes cerebellar symptoms, because the anastomosis with other vessels is extensive, and occlusion does not cut off the blood supply in this vascular distribution. In the medulla oblongata, however, the lesion is usually severe. In the case observed by Haike and Lewy,<sup>2</sup> the symptoms of the lesion in the medulla oblongata were slight, and those of the cerebellar lesion pronounced. A woman, aged sixty years, who had had symptoms of middle ear disease since youth, presented signs of inflammation of the inner ear. Opening of the inner ear lessened the vertigo, headache and nystagmus temporarily, but these symptoms became severe again after a few weeks, and, in addition, there were tenderness on pressure over the right side of the face and weeping of the right eye. The pointing test gave deviation of the right upper limb to the right. Adiadochokinesis and ataxia of the right limbs, abnormal position of the head, Romberg's sign, with falling backward, or to left or right, diminution of the right palpebral fissure, enophthalmos, slight evening rise of temperature, and tremor of the right hand were noted.

<sup>1</sup> American Journal of the Medical Sciences, March, 1915.

<sup>2</sup> Monatsschrift für Psychiatrie und Neurologie, July, 1914, p. 26.

The diagnosis of a lesion of the right cerebellar lobe near the median line was made, and it was supposed to be abscess. Operation was performed, but terminated fatally. The necropsy showed occlusion of the right posterior inferior cerebellar artery with softening of the cerebellum and fresh hemorrhage from a ruptured aneurysm near the middle line. Only slight lesions were found in the medulla oblongata.

**Aneurysm of Brain Vessels.** Aneurysm is more common within the cranium than is generally supposed, for, according to Rhein,<sup>1</sup> 555 cases were collected by Beadles, of which 92 presented no symptoms. In about 20 per cent. of the cases the symptoms suggested tumor, and in 46 per cent. they were those of apoplexy. Rhein reports a case of aneurysm of the basilar artery, and refers to 24 similar cases in the literature. There seems to be no way of making a positive clinical diagnosis of aneurysm as distinguished from tumor, and the symptoms are caused by pressure, softening or rupture with hemorrhage.

**Metastatic Abscess of the Brain** from abscess somewhere at the surface of the body is of uncommon occurrence, although abscess secondary to purulent processes in the lungs has been recognized a long time, and does not appear to be very infrequent. Kutzinski and Marx<sup>2</sup> report a case in which abscess of the frontal lobe seemed to result from a purulent process in the finger. There was no purulent process elsewhere as shown by necropsy, especially none of the nasal fossæ. The process in the finger was almost healed when the first symptoms of the brain abscess developed.

**Progressive Lenticular Degeneration.** Two clinical cases of this disease, occurring in America, have been reported by Cadwalader,<sup>3</sup> one of these was reported by him in 1912 as a case of pseudosclerosis, and in his paper (1914) he refers to the resemblance between the two affections.

In the case of this disease reported by Cadwalader<sup>4</sup> (1915), the patient had been subject to frequently recurring attacks of mental depression, and when she was admitted to the hospital her mentality was distinctly impaired. She was listless, lethargic, and at times emotional. Her memory and all mental processes were impaired so much that at one time dementia precox had been suggested. Spasticity of the limbs and face was present from the onset of symptoms, but tremor was at first almost limited to the right upper limb and face, and gradually affected the entire musculature, although it never became very noticeable except on voluntary movement. The spasticity developed more rapidly than the tremor and masked the latter.

Small irregularly scattered areas of softening were found in the lenticular nucleus of each side; the largest of these were about the size of

<sup>1</sup> Journal of Nervous and Mental Disease, June, 1914, p. 360.

<sup>2</sup> Monatsschrift für Psychiatrie und Neurologie, October, 1914, p. 255.

<sup>3</sup> Journal of the American Medical Association, October 17, 1914, p. 1380.

<sup>4</sup> Ibid., January 30, 1915, p. 428.



the head of a pin, while others were much smaller. They were more numerous in the putamen than in the globus pallidus, and usually a small vessel was found within one of the larger softened areas. The tissue about the softened area showed increase in neuroglia cells. The pyramidal tracts were normal.

**Unilateral Lenticular Disease.** So much is being written now on degeneration of the lenticular nucleus, owing to the stimulus of S. A. K. Wilson's paper, that it is desirable to examine with a critical aspect the many cases reported. We are far from knowing well the functions of this apparently important structure of the brain. Pélissier and Borel<sup>1</sup> have reported, from the service of Dejerine, a case they regard as a unilateral type of lenticular degeneration. The symptoms were tremor, with muscular rigidity confined to the right limbs, dysarthria and dysphagia, without signs of implication of the pyramidal tracts. There was no true paralysis, the tendon reflexes were not notably exaggerated and the plantar reflex was in flexion. The picture resembled that of Parkinson's disease, but the commencement at the age of eighteen years and other features of the case led to exclusion of this diagnosis.

The lenticular nucleus, in the words of Dejerine, has become a "caput mortuum" in that disorders of different character are supposed to be caused by lenticular lesions, such as Parkinson's disease, chronic chorea, the spastic pseudobulbar paralysis with contractures and choreo-athetoid movements of Oppenheim and Madam Vogt, the pseudosclerosis of Westphal and Strümpell, and the progressive lenticular degeneration of Wilson. In other instances the symptom-complex of Wilson has been without lesions of the lenticular nucleus. Dejerine is unwilling to attribute any positive symptoms to this nucleus. Often bilateral lesions are found in this nucleus in cases in which clinical signs were wanting. He believes a lenticular lesion produces symptoms only when it implicates the internal capsule.

**Pseudosclerosis.** Until the present time pseudosclerosis does not appear to have occurred in more than one member of a family, but Rausch and Schilder<sup>2</sup> have observed the disease in two sisters. One sister showed the first symptoms in her twenty-sixth year, and the disease had existed seventeen years. There were the brown pigmentation of the edge of the cornea, insufficiency of the liver, tremor, adiadochokinesis, and scanning speech. The disease began in the second sister in her thirty-third year and had lasted four months. The symptoms were very similar. Hypertonia was not present in either case. These authors regard the Wilson type of progressive lenticular degeneration as a special form of pseudosclerosis, and they refer to Higier's two cases in brothers, one of whom presented the Wilson type and the other the pseudosclerosis.

<sup>1</sup> *Revue Neurologique*, May 30, 1914, p. 722.

<sup>2</sup> *Deutsche Zeitschrift für Nervenheilkunde*, vol. lii, nos. 5 and 6, p. 414.

**Circumscribed Purulent Leptomeningitis.** That purulent meningitis, not tuberculous in origin, may be limited to a small area of the cerebral cortex and that cure may be effected by operation is not generally known. Probably the first case of this kind was the one reported by Shields, Spiller, and Martin. Another case has recently been recorded by Bychowski.<sup>1</sup> A boy was struck on the head by his teacher and complained of headache on the same day. He continued to go to school for two weeks, although he suffered from headache; this became so severe he was obliged to go to bed. He then had fever. In about a week after he had gone to bed, constant involuntary clonic movements of the right upper and lower limbs developed. Consciousness was fully retained. The right limbs became weak and ataxic, the right tendon reflexes were prompter than the left, but a positive Babinski could not be obtained on the right side. A diffuse inflammatory process in the brain was excluded, because consciousness was not disturbed, although fever had lasted eight weeks, because no cranial nerves were affected, and because constant tonic spasms were confined to the right limbs seven or eight weeks. The left parietal region was tender on percussion. The absence of a positive Babinski sign suggested that the process was superficial and the clonic character of the convulsions indicated that the cerebral cortex was affected.

At the operation (the writer speaks of the right psychomotor zone but presumably the left is meant) the pia was found cloudy in a small area and edematous, with flakes of fibrin, and small foci of pus were shown by puncture. The altered pia was removed. On the day following the operation the involuntary movements became less severe and ceased on the fifth day, and in a month the boy was dismissed, having recovered fully. There are, therefore, some cases in the literature which show that operation may be of service in localized purulent meningitis.

**Recurrent Meningitis from Lead Poisoning.** One does not expect to find lead intoxication in children, and is easily excused if he fail to diagnose such a condition. Thomas and Blackfan<sup>2</sup> report an interesting case: A boy, between five and six years old, complained of pain in his face and head and was restless at night. Stiffness of the neck developed and he vomited several times. He became rapidly worse, had convulsions, and became comatose. The head became retracted and the limbs spastic. Kernig's sign was not present. The pressure of the cerebrospinal fluid shown by lumbar puncture was high, and the fluid contained from twenty to forty cells, mostly mononuclear. The right optic nerve was swollen and its edges obscured, and there were numerous hemorrhages in the retina about it. The diagnosis was serous meningitis of unknown cause.

Improvement began after the first lumbar puncture, and in a week

<sup>1</sup> *Neurologisches Centralblatt*, August 1, 1914, p. 953.

<sup>2</sup> *American Journal of Diseases of Children*, November, 1914.

the patient seemed nearly well. Six and a half months later almost identical symptoms developed and nothing could be found as a cause until a slight discoloration was detected about a tooth, and careful inspection revealed a very fine but typical lead line on the gums surrounding many of the teeth. The blood showed well-marked stippling of the red cells (Grawitz's granules). No lead was detected in the urine. The child's mouth was observed to be covered with white lead paint which he had bitten from the railings of his crib. The information was then obtained that he would gnaw any painted object unless he were most carefully watched.

He again made a remarkably quick and uneventful recovery, but some three weeks later he had a severe convulsion and died.

The authors of this report give a very interesting review of the literature on lead intoxication of the brain, but unfortunately were not able to obtain a necropsy in their own case.

**Bitemporal Hemianopic Pupillary Inaction in Meningitis.** Sittig<sup>1</sup> had a patient, a woman six months pregnant, in whom developed rather acutely headache, fever, confusion, and somnolence; and all these symptoms increased during three weeks. There were also slight choking of the disks and paresis of cranial nerves. The most interesting sign of disease was bitemporal hemianopic pupillary inaction; light thrown from the temporal side of either eye caused no contraction of the pupil, while prompt response was obtained to light thrown from the nasal side. The visual fields could not be taken on account of the stupor. Tuberculous meningitis was found at necropsy, implicating the chiasm, and chiefly the middle portion, leaving the lateral portions less affected. This was regarded as affording a possible explanation for the bitemporal pupillary inaction.

**Hydrocephalus.** It is important to remember that hydrocephalus by pressure of the distended third ventricle on the pituitary body may cause symptoms of pituitary disease, and the x-ray examination, in revealing the atrophy of the inner part of the skull in places corresponding to the pressure of the cerebral convolutions, may permit the diagnosis of hydrocephalus. It does not follow, however, that enlargement of the sella turcica in such a case necessarily means pressure from a tumor of the pituitary body. A case of this character is at present under my care, and although hydrocephalus can be diagnosed with certainty, the enlargement of the sella turcica can be explained by the same lesion or by tumor of the pituitary body. There is much need for careful study in cases of this character.

An interesting case is reported by Pollock:<sup>2</sup> A man, aged forty years, weighed 278 pounds. The hair on the body was scanty and the abdomen was so fat that it hung over the thighs like an apron. The penis

<sup>1</sup> *Monatsschrift für Psychiatrie und Neurologie*, August, 1914, p. 180.

<sup>2</sup> *Journal of the American Medical Association*, January 30, 1915, p. 395.



and testicles were partially descended. At the necropsy, marked hydrocephalus was found, and the third ventricle by its distention produced a cyst-like formation above the optic commissure, which it pushed downward and flattened. The pituitary body was flattened from the pressure upon it, and the sella turcica was broadened. The cyst-like formation of the third ventricle extended backward to the crura.

**PUNCTURE OF CORPUS CALLOSUM FOR HYDROCEPHALUS.** That hydrocephalus is frequently associated with tumor of the brain cannot be disputed, but Elsberg's<sup>1</sup> statement is striking, *viz.*, that a careful investigation of a large series of brain tumors has shown him that more or less distention of the ventricles is present in about 75 per cent. of cases in which a new growth is found at operation or necropsy. The intraventricular fluid is an important factor in the causation of the increase of intracranial pressure.

Elsberg has performed the puncture of the corpus callosum, recommended by Anton and von Brahmman, on 7 children who had the non-obstructive variety of hydrocephalus. Two of his patients were much improved. He believes this is the best method at the present time for the relief of this form of hydrocephalus, and if the children are operated upon early enough before irreparable damage has been done to the brain and irremediable changes have occurred, it should be possible to relieve entirely a great many of them.

He has employed the puncture of the corpus callosum thirty times instead of, or combined with, decompressive craniotomies, and in a considerable number of patients has seen great improvement follow the operation. In more than half of the patients an immediate improvement occurred; the headache was relieved, the swelling of the optic nerve heads decreased and sometimes subsided entirely. In several cases the operation was done without any anesthesia because the patients were in stupor or coma. In two of these, the patients became conscious and answered questions before they left the operating table.

**HYDROCEPHALUS FROM CONGENITAL SYPHILIS.** The *London Lancet*,<sup>2</sup> in a brief article, is responsible for the statement that recent biological methods have proved that almost invariably chronic hydrocephalus owes its origin to parental syphilis. Former observers showed that among those diseases to which the congenital syphilitic is subject hydrocephalus occupies the chief place after idiocy and imbecility, but the Wassermann test has failed to establish a relation between syphilis and hydrocephalus. In 1912, Cannata, having made observations on 12 cases of congenital hydrocephalus, came to the conclusion that hereditary syphilis plays a more important part in the pathology of chronic internal hydrocephalus than has usually hitherto been admitted. In a periodical issued by the medical staff of the lunatic asylum at Catanzaro, under

<sup>1</sup> Journal of Nervous and Mental Disease, March, 1915, p. 140.

<sup>2</sup> January 30, 1915, p. 246.

the direction of Professor Frisco, two important cases are recorded: in one, the Wassermann reaction was positive both in the mother and child who was second born following a premature birth of a dead fetus. In the second case the reaction was positive in father, mother, and child.

**Progressive Vagus-glossopharyngeal Paralysis with Ptosis.** An extraordinary form of family disease and one not previously recognized is described by E. W. Taylor.<sup>1</sup> His type consists in paralysis of the vagus-glossopharyngeal group as concerned in the act of swallowing, together with ocular ptosis. The mother of the patient whom Taylor studied died at the age of seventy-seven, and, for many years preceding her death, suffered from an increasing difficulty in swallowing with a definite ocular palsy. Death ultimately resulted from starvation. Seven children of this woman lived to be adults, and three of these, sixty-seven, sixty-eight, and sixty-nine years old, respectively, at the time of death, died with precisely the same symptoms as those of the mothers and of the patient whom Taylor studied, namely, paralysis of deglutition with ptosis. One male of this generation died at the age of forty-five years of another affection; another female at forty-seven years, also of some other disease, leaving only a single female living excepting the patient. This woman is now fifty-seven years old, and, so far as ascertained, is unaffected by the disease. It is a tradition in the family that the disease never begins before the fiftieth year. Every member of the generation to which Taylor's patient belonged, with one exception, who had reached the age of fifty years, had died of the disease, and it was definitely established that starvation, with drooping of the eyelids, occurred in each case.

Taylor thinks the pathology is to be sought in a curiously selective process of degeneration occurring in a limited number of cells of the vagus-glossopharyngeus group, and a single cell group of the oculomotor nucleus. He recognizes that implication of the sympathetic fibers may cause ptosis, but usually in association with the ptosis, when it is caused in this way, is a reduction in size of the pupils, which did not occur.

The peculiarity of the affection, as Taylor says, lies in the fact that although very chronic in course, extending over a long period of years in each instance, no other nerves are involved, thus differentiating it sharply from an ordinary type of bulbar or pseudobulbar paralysis.

Myasthenia gravis must be considered, but Taylor rejects this diagnosis because it is very unusual that the weakness in this disease is limited always to single muscles, and there is no evidence to show that in myasthenia gravis the disease occurs in precisely the same form on an hereditary basis, and the disease usually manifests itself before the fiftieth year. It was not possible in Taylor's patient to demonstrate

<sup>1</sup> Journal of Nervous and Mental Disease, March, 1915, p. 129.

the myasthenic reaction, or the fatigability of the muscles beyond what one would expect in any case of muscular weakness, and there was no tendency to remissions.

**Encephalitis from Pertussis.** Some physicians have seemed to be skeptical regarding the possibility of serious results from whooping cough. The paper by Strümpell<sup>1</sup> should remove this skepticism if it exists. He reviews the literature and shows that cerebral complications have long been recognized, and that convulsions, hemiplegia or diplegia, bulbar symptoms, ocular palsies, and disturbances of speech are mentioned. Spinal symptoms and multiple neuritis also are recognized. A case is reported by Wiegmann in more recent literature. His patient was a woman, forty years old, who, following an attack of whooping cough, had optic neuritis, but no other signs of nervous disease. Recovery occurred with slight changes in the optic nerves and in vision. In a case reported by Nacht, complete blindness and choked disks followed whooping cough. Three days after trephining, improvement began, and complete recovery occurred in a few weeks. There were no other signs of increased intracranial pressure, and Nacht attributed the choked disks to general venous congestion occurring frequently in whooping cough. Strümpell says the number of carefully studied cases of complications on the part of the nervous system in whooping cough is very small, and the manner in which these complications are produced is not understood.

Strümpell's case was as follows: A boy, four and a half years old, had whooping cough since the middle of July, 1914. On August 8, 1914, he complained about his eyes; on August 13 he became paralyzed suddenly in the lower limbs, could not stand and appeared to be blind; this did not follow any severe attack of coughing. He was examined in the hospital on August 17, and found to have loss of pupillary reaction, little movements of the eyeballs, typical advanced choked disks of not quite 1 mm. elevation, such as is said to occur only in cases of brain tumor or hydrocephalus; loss of patellar reflexes and ataxia in standing with inability to walk, attributed to ataxia of the trunk. He made a complete recovery by October, 1914, without operation. Strümpell diagnosed encephalitis in this case.

**Encephalitis from Gasoline.** In these days when the use of gasoline has become common it is important to know that there may be danger from it. More or less transient symptoms are not rare, but the symptoms may be persistent, as Potts<sup>2</sup> points out, and are caused by inhalation of the gasoline. He reports the case of a man who was admitted to the hospital in an unconscious state. He had had the occupation of filling the tanks of automobiles with gasoline, and while at work had fallen over unconscious. He had ptosis of the right eyelid, and the

<sup>1</sup> *Deutsche Zeitschrift f. Nervenheilkunde*, vol. liii, nos. 3 and 4.

<sup>2</sup> *Journal of Nervous and Mental Disease*, January, 1915, p. 24.



right eyeball was directed downward and to the right. He had left hemiparesis, increased patellar reflexes, and symptoms suggestive of a cerebellar lesion. Improvement was gradual in its development, and amounted to almost complete recovery.

**Amaurotic Family Idiocy.** Price<sup>1</sup> has reported a case of this disease in which the Wassermann test of the blood was positive. This, of course, does not prove that the disease has a syphilitic etiology, but Price believes the findings to be of sufficient importance to reopen the argument that hereditary syphilis may be the cause. Turner, in writing on this disease, suggested the possibility of syphilis and believed that in both his cases there were points suggestive of syphilis, and further quoted Gordon Holmes, who had recorded a case of amaurotic idiocy in which the periadventitial cellular infiltration was, in his opinion, suggestive of congenital syphilis.

**JUVENILE FORM OF AMAUROTIC FAMILY IDIOCY.** The late form of this disease has been described by a number of writers, and recently Batten<sup>2</sup> has recorded a family of five children, three of whom were affected with a progressive disease leading to dementia, blindness, and paralysis, one of whom showed changes in the macular region of the eyes. The children were healthy at birth and developed in a normal manner, until the age of three and a half years. Epileptic fits then occurred, and signs of degeneration appeared. The children became noisy, dirty in habits, and developed a spastic condition of the limbs. Death ensued in one child at the age of eight, in another at four, and in the third at six years. In one case no change was visible in the nervous system macroscopically, in another only slight atrophy, but on microscopic examination diffuse degenerative changes affecting the ganglion cells were visible in the cerebrum, cerebellum, and spinal cord. The Wassermann examination of the blood and cerebrospinal fluid was negative in both cases, and no change in the brain or membranes was found suggesting congenital syphilis. Two other cases are reported briefly.

The distinctions between this type of amaurotic family idiocy and the much better known form described by Tay and Sachs are clearly presented by Batten. The former type occurs at a later age, has no race proclivity, and somewhat different clinical manifestations. The typical features are loss of intellectual faculties, loss of vision, and loss of motor power.

In some instances all three defects seem to start together and run an equal and concomitant course. In other cases the mental symptoms appear first, the visual and motor symptoms remaining long in abeyance.

<sup>1</sup> Journal of the American Medical Association, May 16, 1914, p. 1545.

<sup>2</sup> Quarterly Journal of Medicine, July, 1914, vol. 7, p. 444.

In still other cases the visual symptoms appear first, motor and mental symptoms following later or not at all.

In some cases the degeneration begins in early life, in others in later infancy; in others, again, in early youth.

Some cases pass rapidly to a fatal termination, others are slow in their progress.

Some cases show very distinct changes in the macula, others pigmentary changes in the retina, which are not limited to the macula. Others, again, show no fundus change, or do so only in the later stages of the disease.

Clinically, there is great variation in the symptoms, and these, together with their time of appearance, form a basis for classification. Pathologically the cases are essentially the same, and the changes in the cells are strikingly similar in all cases which have come to necropsy.

**Physiology of the Brain.** The war raging in Europe has given opportunity for many observations on wounded soldiers, and Rothmann<sup>1</sup> has paid attention to the physiology of the brain as shown by such men. One of his patients had paralysis of both lower limbs and of the right upper limb, from a bullet wound, but recovery occurred and complete restoration of power was obtained everywhere except in the shoulder, which remained paralyzed. This case seems to indicate that the centre for the movement of the shoulder is nearer than the other centres of the upper limb to the centre of the lower limb. In another case a bullet wound caused at first paralysis only of the left lower limb, but after fourteen days the paralysis extended to the shoulder, then to the elbow, and finally to the fingers. An abscess had developed from above downward. These cases would seem to show that the successive parts of the upper limb are represented in the cortex from above downward.

Rothmann has found that removal of the postcentral and supramarginal gyri in the ape causes a form of past-pointing or hypermetria in grasping an object; in horizontal grasping the past-pointing is toward the side, in upward grasping it is above the object, etc. If these gyri in both hemispheres are removed, the ape cannot grasp his food, although sight may be normal and there may be no paralysis of the arms. In a man, a bullet wound of these gyri of one hemisphere caused, in addition to disturbance of the sense of position and stereognosis, much disturbance in grasping, so that with closed eyes it was impossible for the patient to grasp at once (with the hand of the opposite side) an object previously seen. In one case, in which the bullet had passed through both supramarginal gyri, there was past-pointing in both upper limbs; in still another similar case the inability to grasp an object was great even with open eyes.

An important case is cited by Rothmann for the localization of vision.

<sup>1</sup> Berliner klinische Wochenschrift, April 5, 1915, p. 338.

It seems to confirm Minkowski's findings in animal experimentation, *viz.*, that the upper part of the retina is represented in the anterior part of the visual cortex, the lower part of the retina in the posterior part. Rothmann's case was one of injury in the occipital lobe with loss of the lower half of each visual field. The anterior part of each occipital lobe, especially in the medial side, was destroyed. This case does not support the views of Henschen, *viz.*, that the upper half of the retina is represented in the upper calcarine lip, and the lower half of the retina in the lower calcarine lip.

**The Route of Transmission of Cortical Irritation from One Cerebral Hemisphere to the Other in Epilepsy.** Some experimental work that Karplus<sup>1</sup> has done is of importance in epilepsy. In dogs and monkeys whose corpus callosum has been completely divided longitudinally, cortical irritation is capable of causing general convulsions, either with or without a preliminary tonic spasm. It is generally accepted that the cerebral cortex plays an important role in epileptic convulsions, but Ziehen, and others, attribute only the clonic spasms to cortical irritation. Karplus has found that in the dog when the corpus callosum is divided and the motor cortex of one side excised and the motor cortex of the other side is irritated, general convulsions ensue, but no clonic convulsions occur in the limbs whose motor cortex was excised. Similar experiments, without section of the corpus callosum, have been made by many. When general convulsions occur from cortical irritation of one cerebral hemisphere after division of the corpus callosum, Karplus believes the contralateral cortex also must be irritated. A general convulsion is no more difficult to obtain from unilateral cortical irritation when the corpus callosum is divided than when it is not divided. It must be assumed that the irritation is conveyed to the contralateral cortex through the brain stem (basal region) in the dog, monkey, and man, both in brains with an intact corpus callosum and in those in which this structure has been divided.

**Restoration of the Function of the Brain.** If a lesion of the brain develops in very early life, the possibility of restoration of function is much greater than when a lesion develops late in life. Motor aphasia seldom is persisting, even though the lesion be in the motor speech area, provided the lesion developed in the first or second year of life. This restoration of function depends upon the development of nerve cells and fibers which, under normal conditions, would not be concerned with the function in question. There can be no proliferation of nerve cells in the brain of a child after the first few years of life, but no one knows exactly when proliferation of these cells ceases. Ezra Allen<sup>2</sup> has paid attention to certain aspects of this subject. Different observers, he says, have recorded the fact that mitosis continues in the central

<sup>1</sup> Wiener klin. Wochenschrift, 1914, no. 20.

<sup>2</sup> Journal of Comparative Neurology, vol. xxii, no. 6.



nervous system after birth in mammals which are relatively immature when born, the exact period of its cessation in any one such animal does not seem to have been determined. He has studied the brain and cord of the albino rat, and he has concluded that mitosis ceases in the central nervous system of this animal as follows: (a) No mitoses are found in the cord at any level after the eighteenth day. (b) In the cerebellum, mitosis ceases when the migration of the cells in the external granule layer is complete, a condition reached between the twentieth and twenty-fifth day after birth. (c) In the cerebrum, mitosis continues with a considerable degree of activity to the twentieth day after birth, after which it is found to a slight degree in the mantle layer along the ectal lateral wall, of the lateral ventricles.

The rate of mitosis increases for a time after birth, reaching its high point at about the seventh day for the cord and cerebellum and about the fourth day for the cerebrum.

Allen showed us in this work a few years ago a desirable field for investigation, but, so far as I know, it has not been determined when mitosis ceases in the human central nervous system.

**Cerebellar Symptoms.** The kinematographic studies of Mills and Weisenburg<sup>1</sup> lead them to conclude that the cerebellar gait is chiefly trunkal. In every attempt on the part of the patient to walk, the trunk leans backward, forward, or to one side. The movement of the trunk is predominant and forms the most important part of the gait, the legs seeming to act simply as props for the trunk. In some cases the asynergy is as marked in the shoulder girdle as in the pelvic girdle. The gait is different when the asynergy is more marked in the pelvic girdle, as the legs are held further apart and the arms are nearly always held partly outstretched and semiflexed at the elbows. If the asynergy is only in the pelvic girdle movements, the trunk is held rigidly erect and the legs are pushed forward from the pelvis, giving the impression that the trunk goes after the legs. In the extreme pelvic girdle cases, it is impossible for the patient to walk without help. These authors think the gait of a drunken person is very different from a cerebellar gait, largely because the drunken person has impaired function of his cerebrum.

They believe, with Rothmann, that the cerebellar cortex is excitable to the electric current, and that we must be able to recognize centres for synergically simple movements and centres and zones for more complex synergic movements. Each simple synergic movement has its special cortical representation.

Cerebellar localization, however, is far from being satisfactorily determined, and Dejerine, in the second edition of his *symptomatology of diseases of the nervous system*, expresses the importance of caution in accepting advanced views regarding the cerebellum.

<sup>1</sup> Journal of the American Medical Association, November 21, 1914, p. 1813.

**Syphilitic and Parasyphilitic Diseases.** The conclusions of McIntosh and Fildes,<sup>1</sup> in a paper in which they compare the lesions of syphilis and parasyphilis and offer evidence in favor of the identity of these two conditions, are: The central nervous system is affected by syphilis at the same periods and in the same manner as are other internal organs. In addition, the "parasyphilitic" lesions are also of a typically syphilitic nature, being directly comparable to the parenchymatous affections found elsewhere in the body. They are "tertiary" lesions differing only from the so-called "gummatous" processes in the central nervous system in that their localization is in the parenchyma while that of the latter is in the interstitial tissues. The "parasyphilitic" diseases are due to an exacerbation of *Spirocheta pallida* about nerve elements which are in a state of hypersusceptibility. This state is induced as a reaction to an intoxication occurring in the secondary period, and the spirochetes taking part in the exacerbation are remnants of those which produced the original intoxication.

The path of invasion of the central nervous system may be twofold. Firstly, the spirochetes may reach the nerve elements by the blood stream, as part of the general dissemination of the secondary period, or, secondly, they may reach these structures during the same period by direct spread up the perineural lymphatics. The interstitial nervous lesions of tertiary syphilis are due to a similar process affecting these tissues only.

The progressive character of "parasyphilitic" lesions is due to a continuation of the syphilitic process in spite of treatment, and not to a progressive primary degeneration of the neurons. The degeneration passively extends to the limits of the neuron, but does not actively spread to other neurons. Treatment is ineffective in resolving the inflammation, because drugs in the blood stream are unable to pass from the capillaries into the nervous substance in order to destroy the spirochetes. If, by some method, salvarsan succeeds in penetrating into the brain or cord, it produces such toxic symptoms as make its use impossible.

**SYPHILIS AFFECTING FAMILIES.** Raven<sup>2</sup> finds that in 77 per cent. of 117 families of syphilitic men the family was more or less affected, so that the disease failed to be communicated to the family in only 23 per cent. of the cases. The primarily affected husband developed a syphilitic nervous disease more frequently than the secondarily affected wife. The same form of disease was seldom seen in both husband and wife. The secondary infection was usually latent when the primarily-affected husband had a syphilitic nervous disease, but, if he had not, the secondarily affected person presented signs of the disease relatively often. This would seem to show that the virulence was diminished by

<sup>1</sup> Brain, September, 1914, vol. xxxvii.

<sup>2</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. li, nos. 3 to 6, p. 342.

passage through the nervous system. The wives of syphilitic husbands gave the following findings: 46.15 per cent. had syphilitic nervous disease, 24.6 per cent. had positive reaction in the blood, and 29.25 per cent. remained healthy. Of the children of syphilitic parents, 47.7 per cent. died, either as premature births or early in life. Of the remainder, two-thirds were sickly. Syphilis of the mother is more serious for the children than syphilis of the father. The children born of syphilitic parents soon after the infection were more affected than those born later, and until sixteen years after the primary infection children born of syphilitic parents showed signs of syphilis.

A study of the families of paretic men has been made by Hyde.<sup>1</sup> He investigated the condition of one hundred married men who had been admitted to the Cleveland State Hospital during four and a half years and who had paresis, also their wives and children, and obtained serological and cytological findings. The ages of the men ranged from twenty-eight to sixty-one years, with an average of forty-five years. Careful measures were taken to get a reliable history as to the time of infection, and a satisfactory history was obtained in 70 per cent. of the cases, a questionable history in eighteen, and no history in the remaining twelve cases.

The average cell count of the cerebrospinal fluid was thirty-two, the highest one hundred and twenty, and the lowest twelve per c.mm. In reviewing the findings of the wives, twelve showed a very positive serum reaction. None of these women was aware of any existing disorder, and all were unable to give any history that would suggest the time of their infection. These twelve women gave a history of forty-nine pregnancies, resulting in forty-four deaths and five living children. The forty-four cases of death were subdivided into twenty-four cases of miscarriages, nine of still-births, and eleven of death soon after birth. The mothers gave a history of from two to four miscarriages before the birth of these five children. Each child had a very positive serum finding, and all presented well-defined dystrophies. The remaining eighty-eight wives, whose serum tests were negative, were the mothers of one hundred and twenty-nine children, and gave a history of two hundred and one miscarriages and still-births. Forty-six of these women were the mothers of all the children, and gave a history of one hundred and sixteen miscarriages and still-births. The serum tests of one hundred and sixteen, of the one hundred and thirty-four children, showed a positive Wassermann reaction in thirteen cases. All of these thirteen children presented some of the dystrophies, and none had ever enjoyed good health. The remaining one hundred and three children, whose serum was negative, presented varying types of health, the majority being below normal, physically. The statistics

<sup>1</sup> Cleveland Medical Journal, October, 1914, p. 714.



invariably showed that the longer the infection was previous to the birth of the child, the greater was the child's chance to be free from any congenital defect and to enjoy good health. Twenty-eight of the remaining forty-two wives gave a history of eighty-five miscarriages and still-births with no living children, and the remaining fifteen women had never been pregnant.

**SYPHILIS IN THE THIRD GENERATION.** The cases of syphilis transmitted to the third generation are not numerous, nevertheless, Nonne<sup>1</sup> has collected some cases of this character. He believes these cases are rare because often it is not known that either parent of a syphilitic person was syphilitic, and because children usually are not examined for syphilis if they do not present prominent signs of congenital syphilis. If we were to examine the children of congenitally luetic parents by the Wassermann reaction and Noguchi's luetin test we should oftener find syphilis in the third generation. It is very important in these cases to show that one parent had not acquired syphilis outside of marriage, while the other was congenitally syphilitic, for it has been demonstrated that a congenitally syphilitic person may be infected again with syphilis. Nonne gives examples of such infection taken from the literature, and reports three cases of syphilis transmitted to the third generation. We probably should obtain frequently positive results were we to study by these methods the children born from children of parents who had tabes or paresis.

**IS A REFLEX PUPILLARY RIGIDITY ALWAYS A SIGN OF EXISTING SYPHILIS?** Isolated reflex rigidity of the pupil, as the expression is used, is regarded by many as a positive sign of syphilis of the nervous system. In the report of a case by Nonne and Wohlwill,<sup>2</sup> in which this condition of the pupil existed, the cerebrospinal fluid was examined for cellular contents, increase of globulin and Wassermann reaction, with negative result, and later brain and cord were studied by microscopic sections and syphilitic lesions in them not found, is naturally of great interest. These authors knew of no similar case in the literature studied in this detail, and Bumke, who has devoted much attention to the pupil, knew of no such case. We will grant, therefore, that Nonne and Wohlwill have ground for concluding that Möbius was not justified in stating that every reflex pupillary rigidity is the expression of an existing though possibly latent tabes, paresis or cerebrospinal syphilis. Chronic alcoholism is an extremely rare cause of reflex pupillary rigidity and cannot be accepted if the patient has had syphilis. Nonne and Wohlwill believed that, in their case, they could positively exclude paresis, tabes or nervous syphilis, and they concluded their case showed, inasmuch as the history revealed that the patient had contracted syphilis

<sup>1</sup> Festschrift dem Eppendorfer Krankenhause zur Feier seines 25 jährigen Bestehens gewidmet, 1914.

<sup>2</sup> Neurologisches Centralblatt, May 16, 1914, p. 611.

thirteen years before she came into the hospital with delirium tremens and fourteen years before her death, that isolated reflex pupillary rigidity may be the residuum of a previous syphilitic process, and that the activity of the clinical syphilitic lesions may be considered as having ceased when the reactions of the cerebrospinal fluid are negative.

**ARGYLL-ROBERTSON PUPIL FROM ALCOHOL.** The case which Nonne reported three years ago in which he showed that alcohol might produce the Argyll-Robertson pupil, was of importance, but the case he now reports<sup>1</sup> is even more carefully observed. His patient, a woman, gave no evidence of syphilis, nor did her husband, whose blood was examined by the Wassermann test. The case was studied also by Wilbrand, and he determined that no optic neuritis nor retrobulbar neuritis existed. Three Wassermann tests of the blood and three of the cerebrospinal fluid were negative. The loss of the light reaction lasted four months, then gradually light reaction returned slightly.

**TABETIC OCULAR PALSIES.** There has been a long struggle to establish firmly a relation between tabes and paresis as syphilitic diseases. Erb has written many papers on this subject, and gradually facts have accumulated, until at the present time few neurologists doubt that syphilis is the chief and possibly the only cause of tabes and paresis. The finding of the *Spirocheta pallida* in these diseases has been the clinching of the nail, and it seems to me probable that the sharp distinctions between syphilitic and parasyphilitic diseases will be weakened. I have called attention to this subject in a recent paper and given references to the literature bearing upon it.

A sharp distinction has been made between the ocular palsies of cerebral syphilis and those of tabes. The former are caused, in the opinion of some, by peripheral lesions; the latter by nuclear lesions. I question the correctness of this interpretation. Most of the ocular palsies of tabes or cerebral syphilis probably are primarily peripheral, that is, they are caused by syphilitic meningitis implicating the ocular fibers at their exit from the brain. In a case of tabetic ocular palsy studied by me,<sup>2</sup> the findings indicated that the lesions were primarily peripheral. In studying spinal-cord sections from cases of tabes, lymphocytic infiltration of the pia is by no means a rare finding. It would seem that in some cases the infection causes only an infiltration and in others a degeneration of nerve fibers, but the two processes are not essentially different.

**SYPHILIS OF THE VERTEBRAL COLUMN.** According to J. R. Hunt<sup>3</sup> there are about one hundred well-authenticated cases of syphilis of the vertebral column. The great frequency of the cervical localization has been noted by all writers on the subject. Gerhardt has suggested that

<sup>1</sup> Neurologisches Centralblatt, April 13, 1915, p. 254.

<sup>2</sup> Journal of Nervous and Mental Disease, January, 1915, p. 15.

<sup>3</sup> American Journal of the Medical Sciences, August, 1914, p. 164.

this frequency may be caused by the proximity of this region to the bones of the skull, and, as a consequence, the extension of the disease downward. Another factor has been the secondary involvement of the upper cervical vertebræ by direct extension from pharyngeal ulcerations and gummata, as accepted especially by Neumann. One of Oppenheim's cases showed that the thoracic region may be the seat of the lesion, as the eleventh and twelfth thoracic vertebræ were affected. In one of Hunt's four cases, there was syphilitic osteitis of the lower lumbar vertebræ and sacrum, confirmed by pathological examination. The x-rays are of service in the diagnosis, but in two of Hunt's cases with severe vertebral symptoms no bone lesions could be demonstrated in the radiograms, and the bone involvement was evidently more in the nature of a periostitis. In another case definite lesions, exostoses with thickening of bone tissue, were found.

The pathological conditions in the vertebral cases Hunt says are the same as those found elsewhere when the skeleton is involved, and consist of exostoses, gummatous periostitis, and osteomyelitis, with occasional necrosis and sequestration of bone. The tendency to pus formation is slight, and "cold abscesses," as found in tuberculous caries, apparently do not occur.

The symptomatology of *syphilitic spondylitis* does not differ essentially from that accompanying other affections of the spine, and consists essentially of pain, tenderness, rigidity, and deformity. In some cases, more especially in the cervical region, firm, nodular swellings may be palpated (exostoses). Tenderness appears to be greater than is usual in tuberculous spondylitis, and the nocturnal osteocopic pains are particularly persistent and distressing.

In the 100 cases which Hunt analyzed, neural symptoms were present in 26, distributed as follows: Cervical region 15 cases, thoracic region, 5 cases, lumbar region 4 cases, sacral region, 2 cases. Hunt finds that neural symptoms are more frequent in recent reports, probably because more exact methods are employed at the present time, which serve to detect the milder grades of pressure, both of the cord and nerve roots.

The neurological examinations in the series were by no means complete, but a general idea may be obtained of the nature and extent of the injuries of the neural structures. Of the 26 cases with neural complications, 14 were associated with symptoms that would indicate a lesion of the spinal cord, compression, corresponding to the level of the bone disease.

In 9 cases the limitation of symptoms to paralysis and paresthesia of one upper or lower extremity indicated a radicular origin. An involvement of the roots or plexus producing monoplegia, Hunt thinks must be rare in Pott's disease, and, when it occurs, it should arouse the suspicion of syphilis.

In 2 cases of sacral origin, the symptoms indicated involvement of the cauda equina.



Root pains, paresthesia and localized paralysis of an extremity corresponding to the region involved are frequent from lesions of the cervical region and may simulate the symptoms of pachymeningitis cervicalis hypertrophica.

Hunt reports 4 cases of syphilitic spondylitis in detail, and concludes that while spondylitis and perispondylitis of this origin are rare, they are sufficiently frequent to be given careful consideration in every case of acute or chronic vertebral disease. The onset may be sudden, simulating an acute rheumatic affection, or it may be gradual, and the disease run an exceedingly chronic and protracted course. Localization in the cervical region especially should arouse the suspicion of syphilis, as more than half of the recorded cases are of this region.

**INCIPIENT PARESIS.** It is well recognized that paresis may begin with the symptoms of neurasthenia, and that it may be impossible to decide whether this grave organic disease is present. It would seem, from a case reported by Nonne,<sup>1</sup> that the laboratory may help in the diagnosis. A man, forty-eight years of age, who had acquired syphilis eleven years previously, came to Nonne for treatment. He had worked hard and had had financial losses. He complained of insomnia, of lack of mental vigor, of periods of depression, headache, and feelings of anxiety. A Berlin neurologist diagnosed melancholia, and Nonne at first regarded the case as one of neurasthenia with depression occurring in a syphilitic person. The Wassermann reaction of the blood was + + +, of the cerebrospinal fluid + + +; there was considerable lymphocytosis of the fluid and positive Nonne-Apelt reaction. There was no failure of intelligence, of attention or memory. The man committed suicide as a result of business reverses. The laboratory findings caused Nonne to diagnose incipient paresis. The microscopic findings showed cellular infiltration of the pia of the brain and about the vessels within the brain, consisting of round cells and scattered plasma cells. Disappearance of nerve cells was detected in numerous places. These findings Nonne regarded as confirmatory of the diagnosis of paresis. He emphasizes the fact that the tests made were positive in a late case of syphilis, that the symptoms were not indicative of a focal lesion. Are we to conclude that every person who acquired syphilis some years before the examination, and presents symptoms of the character described above, and has the four reactions which Nonne regards as so important, necessarily has beginning paresis? Such a conclusion it seems to me will lead to much error.

**CELL COUNT IN PARESIS.** An interesting study has been made by Mitchell, Darling, and Newcomb.<sup>2</sup> They found that the results of cell counting in their series of cases being treated by the Swift-Ellis method were so uncertain that it was determined to make some comparative

<sup>1</sup> *Neurologisches Centralblatt*, September 16, 1914, p. 1074.

<sup>2</sup> *Journal of Nervous and Mental Disease*, November, 1915, p. 686.

counts at regular intervals upon untreated cases of paresis, to ascertain the extent of fluctuation in the pleocytosis. Some three hundred counts were made upon 34 patients with paresis at intervals of two weeks. The Wassermann test upon the blood serum was positive in 33 cases, while in one case three trials gave negative results. The same test upon the fluid was positive at some time in all cases, while in three cases only did it, at any time, give faintly positive or negative results.

In these cases a count of three or less was found at some time in all but two, both far advanced paretics. Seven of the cases showing high average counts were paretics exhibiting excitable grandiose tendencies during the period that they were under observation, but similar results were also found in cases showing pronounced dementia and comparative remission of active symptoms.

High counts were found in all stages of the disease, from the first to the tenth year of well-defined paretic symptoms.

In several cases, very great variation was shown in the counts at two-week intervals without any appreciable changes in the patients' symptoms.

Low average counts were also found to occur in all stages of the disease. They conclude that great variation in the cell count may occur at short intervals in any stage of the disease. Both high and low average counts persist for months at a time in various stages of the disease. A low or falling count is common but not universal before death. A reduction in the cell count to the normal limit frequently occurs in progressive untreated cases at anytime during the course of the disease. The reduced cell count, accompanied with persistence of a positive Wassermann in the fluid, cannot be regarded as having valuable prognostic significance.

**TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM.** This important subject has been studied by Sachs, Strauss, and Kaliski,<sup>1</sup> on the basis of 120 cases, of these 55 were cases of tabes, 20 of general paresis, 41 of cerebral and cerebrospinal lues, 3 of optic neuritis, and 2 of specific spondylitis. If the examination showed an active leucic process, intensive treatment was administered. A series of salvarsan injections was given intravenously at intervals of seven to ten days, the average dose being 0.25 gram to 0.4 gram. After four to six injections of salvarsan had been given, the patients received a series of intramuscular injections of salicylate of mercury in 0.5 to 1 grain doses. These injections were given weekly until from ten to fifteen injections had been administered. They have given several courses of treatment as described, discharging patients for a period of three or four weeks and asking them to return for a completion of the treatment. If they erred at all they believe it has probably been in not pushing the treatment

<sup>1</sup> American Journal of the Medical Sciences, November, 1914, p. 693.

vigorously enough. The only real contraindications to the injection of salvarsan are severe renal involvement, very marked cardiac disease with insufficiency of the cardiac muscle, impending coma in diabetes or nephritis, terminal conditions which are not likely to be benefited by salvarsan, and a known intolerance of the drug. In a large number of cases treated with salvarsan, they observed few untoward results. Enteritis developed in one case, severe nephritis in one, arsenical erythema in one, and a lesion of the inferior cerebellar artery in one. They have had practically none of the nerve recurrences (neurorecidives). The satisfactory results obtained by the intravenous injection of salvarsan have induced them to resort less often to the intraspinous injections of salvarsanized serum. The intraspinous methods are more difficult to perform than the intravenous injection and are more painful, and an analysis of their cases showed them that the intravenous injections alone yielded equally good results. In a series of nine cases of tabes at the Montefiore Home, the intravenous injection of salvarsan accomplished as much for the patient as could be expected from the intraspinous injections combined with the intravenous.

On a number of occasions, after the careful introduction into the spinal canal of salvarsanized serum, they found the patient required opiates to relieve the intense pain. The general condition also was much impaired, and the legs partially paralyzed. One patient with early paresis, within twenty-four hours after an intraspinous injection of 6 mg. of neosalvarsan, developed a complete paralysis of the leg and marked paralysis of the vesical and rectal sphincters, the symptoms persisting for three months and ending in death. Although these unfortunate results seem to have occurred especially after injection of the drug directly within the spinal canal, these authors now hesitate to urge any form of intraspinous treatment. Benedict has found that when blood has been withdrawn fifteen to forty-five minutes after intravenous injection of salvarsan, 20 c.c. of whole blood contain only 0.00004 gram to 0.0001 gram of metallic arsenic. On the other hand, spinal fluid withdrawn twenty-four hours after an intravenous injection of salvarsan contains free arsenic in about one-sixth to one-tenth the concentration of the whole blood.

So much stress has been placed on the biological reactions of nervous syphilis that it is important to read what these authors have to say on the subject. They question whether we are not paying too much attention to the mere reduction of cells in the spinal fluid. Where there is a high cell count, and especially in the more acutely luetic processes of the cerebrospinal system, there is no question, they think, of the advisability of attempting to reduce the cell count. The cell count is merely evidence of the presence of an inflammatory process. There is very little correspondence between the change in the reactions in the spinal fluid and the change in the symptoms.



These authors have found that the progress of tabes has been arrested by their treatment in many instances, but they have had several experiences tending to show that, in spite of early and intensive treatment, the progress of an impending tabes could not be averted.

Nonne<sup>1</sup> advises the use of salvarsan with mercury and iodid in the treatment of nervous syphilis. There is danger that salvarsan may make active a latent syphilitic lesion in an important part of the nervous system, as the medulla oblongata. He advises that the treatment should be begun with mercury, this should be followed by salvarsan, then both should be used alternately. The beginning dose of salvarsan should be 0.2 or 0.3 gr., and this may be increased to 0.5 gr. or even 0.6 gr. if the salvarsan is well borne, but the entire amount given should not exceed 3 or 4 gr. If the symptoms still persist, mercury and iodid should be continued, but an interruption of weeks or months should be permitted.

Nonne asserts that it is sometimes impossible, even by intensive treatment of tabes and paresis, to abolish the Wassermann reaction of the blood and the three reactions of the cerebrospinal fluid. He thinks that every tabetic person should receive antisyphilitic treatment, much as he recommends above, but it should not be pushed in the attempt to abolish the four reactions. If the tabes is abortive, the antisyphilitic treatment should not be given again before a year has passed, and should not be with large doses. If acute exacerbation occurs the antisyphilitic treatment should be used to combat it. Advanced cases of tabes should not receive antisyphilitic treatment. What has been said of tabes applies also to paresis, but still more caution must be used in the beginning doses.

The treatment with salvarsan has now been carried on long enough to permit valuable conclusions. Craig and Collins<sup>2</sup> describe the results obtained by them in upward of 1500 administrations of salvarsan and neosalvarsan at the Neurological Institute during four years. They think neosalvarsan is not so potent as salvarsan, and they have returned to the use of the latter drug. The immediate after-effects of neosalvarsan are usually milder, but its curative value is also less. Within twenty-four or forty-eight hours these authors find that the patient usually experiences a feeling of well-being, such as he has not had for some time, and if he has been having pains they have disappeared. After the first dose of salvarsan, tabetic pains which may have tortured the patient for a decade or more may disappear never to return. The greatest single relief obtained from salvarsan they believe to be the disappearance of these pains.

Endarteritis, occurring early in the syphilitic disease and causing focal symptoms, usually yields readily to salvarsan therapy, if an area

<sup>1</sup> Münchener med. Wochenschrift, February 23 and March 2, 1915, nos. 8 and 9.

<sup>2</sup> Journal of the American Medical Association, June 20, 1914, p. 1955.

of softening has not occurred. These authors recommend the employment of salvarsan in full doses every five or seven days for a greater or less period, being guided chiefly by the state of the spinal fluid, especially with regard to the cell count. As to optic nerve atrophy from salvarsan they believe the optic atrophy was already in process, although perhaps not demonstrable, at the time the drug was given. They have seen an incipient optic atrophy the result of syphilitic virus go steadily forward to complete atrophy while under vigorous salvarsan therapy. They have also observed a progressing optic nerve atrophy held in check by the use of salvarsan; in fact, vision improved after the administration of salvarsan.

Bériel and Durand<sup>1</sup> have found that intradural injections of mercury and salvarsan not in serum are too irritating, and that only serotherapy is suitable for this method. Objection has been made to the method of Swift and Ellis that the serum injected contains too little salvarsan, and now Bériel and Durand states that it contains no syphilitic antibodies; and they suggest a means to remedy this defect. After the injection of salvarsan into a vein the serum should not be removed an hour later but only after several such injections have been given, and at least twenty-four hours after the last injection. The serum should be taken from another patient who has signs of recent syphilis, as in the tabetic patient the syphilitic process is not sufficiently active and the antibodies are not so numerous or efficacious. The serum should then be injected into the tabetic patient by lumbar puncture and into the paretic patient by cranial puncture, twenty-four hours after the removal from the second patient and after it has been heated to 56°, presumably centigrade, half an hour. In this way it is believed the serum will be sterilized and the antibodies not damaged. These investigators have used this method in four lumbar injections on two tabetics and in seven intracranial injections. In one tabetic, the process was arrested, and, in the paretics, mild remissions occurred. The method of intracranial injection is given by these writers in a previous number of the *Neurologisches Centralblatt*, (1914, No. 1).

This method theoretically may be acceptable, but we may assume that many tabetic persons, in this country at least, would object strenuously to the injection into their bodies of serum from a pronounced case of syphilis no matter how carefully the serum had been treated.

Pilsburg<sup>2</sup> has tried the Swift-Ellis method of intradural injections of salvarsanized serum on thirteen patients with paresis. Two of these received only one intraspinal injection each. Of these two, one was not improved, and the other died. The man did not bear salvarsan well when it was administered intravenously, but it was thought best to try an intraspinal treatment. He had a paretic seizure following

<sup>1</sup> *Neurologisches Centralblatt*, May 16, 1914, p. 612.

<sup>2</sup> *Journal of the American Medical Association*, October 10, 1914, p. 1274.

this and died in about six hours. He had had one paretic seizure previously. Of eleven patients six were improved in some respect, not necessarily clinical, one was no better and four died. Almost all were well advanced in paresis. In most cases there was a tendency toward a reduction in the amount of globulin and albumin; in the number of cells, and in the spinal fluid Wassermann.

Riggs and Hammes,<sup>1</sup> writing on the same method of treatment, conclude that clinical improvement and serobiologic reduction usually go hand in hand; that the report of cases without their associated laboratory reactions is unscientific and valueless; that the intraspinal use of salvarsanized serum is a notable advance in the therapy of syphilitic affections of the central nervous system; and that it is a safe procedure in the hands of trained men.

*Mercurialized Serum in Treatment of Nervous Syphilis.* On account of the disappointment which has resulted from the injection of salvarsanized serum into the spinal column, Byrnes<sup>2</sup> has devised a method for the intradural injection of mercury. His technique is as follows:

1. Sufficient blood is withdrawn to yield from 12 to 30 c.c. of serum. The larger amount is obtained if concentrated serum is to be used. After the blood has coagulated, the serum is pipetted, and, if necessary

2. Centrifugalized for twenty minutes.

3. If diluted serum is to be used, to 12 c.c. of the centrifugalized specimen is added 1 c.c. of a solution of mercuric chloride in freshly distilled water so made that each cubic centimeter contains 0.0013 gm. ( $\frac{1}{50}$  grain) of mercuric chloride.

4. To the serum thus prepared is added sufficient quantity of normal salt solution to make a total volume of 30 c.c. If the concentrated serum is used, this step is omitted.

5. It is heated at 56° C. (132.8° F.) for half an hour, and

6. Administered, by gravity, at body temperature.

As the desired amount of mercury is readily soluble in the diluted serum, Byrnes sees no special reason for employing the concentrated preparation.

The reaction following the administration of mercurialized serum is usually mild. There is some pain in the legs for six or twelve hours, slight nausea, rarely vomiting, and a moderate rise of temperature. All these symptoms generally subside within thirty-six hours. In most instances there has been decided relief of the pains of tabes, the gait has improved, and gastric symptoms have been alleviated; in other cases there has been little or no change in the clinical condition. The spinal fluid has, in every instance, shown a marked decrease in the cellular elements, and, in many cases, the diminution has occurred more rapidly than is observed after the use of salvarsanized serum.

<sup>1</sup> Journal of the American Medical Association, October 10, 1914.

<sup>2</sup> Ibid., December 19, 1914, p. 2182.



The globulin is in general diminished, but the Wassermann reaction, in the use of salvarsan, appears to be less readily affected. Byrnes' conclusions are: Mercurialized serum alone is not the only treatment that is necessary in syphilis of the nervous system, but it is equally, if not more, efficacious than salvarsanized serum in the local treatment of these diseases.

The reaction is less severe than that following the injection of salvarsanized serum, and the cell count of the spinal fluid is more quickly reduced.

The blood may be obtained at any time, and the mercurialized serum may be kept in sealed flasks until it is convenient to administer it. Byrnes has frequently given the combined salvarsanized and mercurialized serum intraspinally.

*Gold Sol Reaction.* Interesting statements are made by Solomon and Welles<sup>1</sup> from their findings in the cerebrospinal fluid taken from different parts of the central nervous system of cadavers. They used the gold sol reaction of Lange. They find that the reaction may vary in the fluids from the same case taken from different loci. Thus the fluid from the lumbar region may differ in its reaction with the gold sol, thereby proving a difference in the albumin content, from the fluid obtained from the third ventricle, which in turn may differ from the fluid of the lateral ventricles or subarachnoid space, and these fluids may each differ from one another. Such a difference is not invariable. The work of these investigators demonstrates that inasmuch as the composition of the cerebrospinal fluid varies in the cisternæ and spaces of the cerebrospinal axis, in all probability there is not a free circulation or exchange of the fluid. They have proved that the examination of the albumin content of cerebrospinal fluid obtained by lumbar puncture is not, in all cases, a true indication of the condition existing higher up. What is true of albumin, they think, is probably true of other substances, especially the Wassermann reaction, as the Wassermann bodies are probably contained in the globulin.

**Tumor of the Cord.** Elsberg,<sup>2</sup> in an interesting paper, points out that pain of spinal origin often is misinterpreted. He has had two patients sent to him with the diagnosis of acute appendicitis who had Pott's disease, with irritation of the spinal roots, and areas of skin and muscle tenderness in the right iliac region. He has records of three patients who had spinal tumor but were supposed to have pain of other origin. He makes the interesting statement that the lower fibers of the seventh cervical posterior root supply the index finger, and the upper fibers of this root supply the thumb. The outer surface of the spinal dura is insensitive to touch and may be rubbed or scratched with a needle, but the inner surface is very sensitive, and gentle handling is

<sup>1</sup> Boston Medical and Surgical Journal, April 29, 1915, p. 625.

<sup>2</sup> American Journal of the Medical Sciences, March, 1915.

felt as a painful sensation. The surface of the cord is not sensitive to pain excepting along the line of origin of the nerve bundles which form the posterior roots. An incision can be made into the cord without the patient feeling it, but Elsberg found that one patient complained of a burning sensation in one leg while the cord was being pulled upon.

**PAINLESS TUMORS OF THE SPINAL CORD.** Pain rightly is considered an important symptom of tumor of the spinal cord, and yet it may be entirely wanting. Pearce Bailey<sup>1</sup> described cases of this character in 1896, and now returns to the subject. Malaise believed that 5 per cent. of extramedullary tumors were painless. Bailey says it is impossible to rely on published case reports to determine what percentage of spinal cord tumors run their course without pain, since, in the absence of this symptom, which is relied on more than any other for diagnosis, an operation is rarely performed, and correct diagnosis often is not reached unless a necropsy be done. Bailey mentions that another way in which tumors of the spinal cord may escape recognition is by the infrequency of the attacks of pain. The patient forgets that pain has been severe, such as one expects with lesions of the posterior roots. In some cases of spinal tumors, pain is extremely severe at some periods, but long intermissions occur during which the patient may pass months of comparative comfort without any pain. One of Bailey's patients, during an interval of relief, recovered sufficiently to go to Europe and thought she was cured. There are cases in which the pain is slight or is a feeling of discomfort, of heaviness or of burning. Where there is any visceral disease, the pain may be referred wrongly to this disease, but such cases surely are uncommon, as must be such a case as that observed by Krauss and referred to by Bailey. A man ill of tuberculosis had disease of the left lung. Severe pains were referred to this lung, and, in spite of the fact that paraplegia was also present, it was not recognized that the lesion which caused the paraplegia also caused the pain in the lung. The absence of pain is of great importance in relation to the question of operation.

Collins and Marks<sup>2</sup> also emphasize the occurrence of tumors of the spinal cord without pain. They say: "Just as complete absence of pain must be recognized if an early diagnosis is to be reached, so it must also be recognized that pain, when present, may present little or nothing characteristic. The neuralgic character may be entirely lacking. The pain, instead of being radicular, may be of a centrifugal type, appearing in parts of the body far removed from the segmental localization of the tumor." The pain may be referred to various viscera and lead to mistaken diagnosis. They would make the essential element in the diagnosis of tumor of the spinal cord the determination of a gradually progressive motor and sensory spinal paralysis, the upper

<sup>1</sup> Journal of the American Medical Association, July 4, 1914, p. 6.

<sup>2</sup> American Journal of the Medical Sciences, January, 1915.

pole of which, despite increase in cross-section intensity, varies slightly, if at all. In every case of so-called transverse myelitis, the possibility of cord tumors should be considered and they advise exploratory laminectomy in all doubtful cases.

**LUMBAR PUNCTURE WITH SPINAL TUMOR.** Further evidence that lumbar puncture in certain conditions may be dangerous is furnished by Newmark.<sup>1</sup> In two cases of spinal tumor he observed that the paralysis was much increased by lumbar puncture, even though in one case no fluid was obtained. In his first case the ability to stand and walk, although with difficulty, disappeared within a few hours after the withdrawal of 6 c.c. of fluid, but complete recovery occurred after the removal of a tumor pressing upon the cord. In a case of tumor of the cervical region reported by Nonne, flaccid paralysis of all four limbs followed lumbar puncture, and operation for removal of the tumor terminated fatally. Newmark's second case, in which severe paralysis followed lumbar puncture although no fluid was obtained, is extraordinary. He concluded that the puncture caused change in the intraspinal pressure and thereby displacement of the tumor and greater pressure upon the cord. It was hardly a mere coincidence that paralysis followed the puncture, especially as headache was produced, nor was the paralysis probably from the flexion of the spinal column necessary for performing puncture. Newmark's cases were not so serious as was Nonne, as only in Nonne's case was death caused by the puncture, but all three cases give us reason to be cautious in performing puncture where spinal tumor is believed to be present.

**THE NERVE SUPPLY OF THE DIAPHRAGM AS SHOWN BY SPINAL TUMOR.** Oppenheim<sup>2</sup> has been surprised that, in tumors of the upper cervical region, the phrenic nerve is so little affected, even though the tumor be at the origin of this nerve or just above the origin, with increase of the cerebrospinal fluid below the tumor. He thinks the diaphragm is not innervated from the cervical region alone, but he does not discuss this subject further. If the phrenic nerve be not the only motor supply of the diaphragm, it is important in surgery to know this.

**CAUDA TUMOR RESEMBLING SCIATIC NEURITIS.** Tumor of the cauda equina frequently begins as sciatica, but seldom do the symptoms last so many years without positive signs of tumor, as in two cases reported by Oppenheim.<sup>3</sup> The first case was one in which sciatic pain lasted seven years; it began in the left lower limb and later implicated the right. There was also pain in the lower part of the back and outer side of the right thigh. The diagnosis was made of root neuritis of the sciatic nerve, probably from chronic serofibrous meningitis. A lumbar puncture gave xanthochromia (yellow tinge of fluid) and great increase

<sup>1</sup> Berliner klin. Wochenschrift, 1914, no. 43.

<sup>2</sup> Neurologisches Centralblatt, August 1, 1914, p. 983.

<sup>3</sup> Monatsschrift für Psychiatrie und Neurologie, December, 1914, p. 391.



of albumin, but no pleocytosis (increase of cells) and no tumor cells. There was slight hypalgesia about the anus, and this was the only sign suggesting tumor. An operation was performed and a tumor was found enveloping the cauda equina. The finding of xantochromia and increase of albumin in the cerebrospinal fluid might have suggested compression of the cord, as these conditions have been observed with compression. The second case was similar.

**EXTRADURAL SPINAL TUMOR AND THE REFLEXES OF DEFENCE.** The importance of the reflexes of defence which I have described in previous articles in *PROGRESSIVE MEDICINE* (1913 and 1914) is again shown by a case reported by Babinski, Lecène and Jarkowski.<sup>1</sup> The diagnosis of a spinal tumor extending upward to the fourth or fifth thoracic segment was made, this diagnosis depending largely on the extent upward of the anesthesia. It was desirable to determine the lower limit of this tumor, and the reflexes of defence showed that the tumor extended downward to about the ninth thoracic segment. As four or five segments were implicated, the tumor must be long. Only extradural spinal tumors are supposed to be so long as this, and, consequently, an extradural tumor was diagnosed. An operation was performed. Laminectomy of the third to the seventh thoracic vertebrae, inclusive, was performed, and an extradural tumor was found. It was an angiolipoma. These authors conclude from this case that an extradural tumor may develop very slowly and show only slight symptoms during many years; that a compression of the cord may cause complete paralysis with contracture, lasting a long time, without the nervous tissue undergoing severe alteration, as the symptoms may disappear entirely; that after the removal of a tumor the disappearance of the paralysis with contracture may be very slow; and that the reflexes of defence by showing the existence of a long tumor may indicate that it is extradural. This is the first case, these authors state, in which such an extradural tumor has been diagnosed from the clinical findings.

Martel in the discussion of this case, reported a very interesting experience as showing how long it may take for improvement to occur. He had the greater part of an intramedullary tumor of the spinal cord removed. There was no improvement for a long time, but fifteen months after the operation the patient began to walk. The case is important as showing that intramedullary tumors may be operated upon successfully.

**The Use of Splints in Poliomyelitis and Other Organic Nervous Diseases.** It is very true, as G. Wilse Robinson<sup>2</sup> states in an interesting paper, that the prevention of deformities is the most important part of the after-treatment of poliomyelitis. They occur frequently and are in great degree responsible for the permanent disabilities. Robinson says

<sup>1</sup> *Revue Neurologique*, June 30, 1914, p. 801.

<sup>2</sup> *Journal of the American Medical Association*, August 29, 1914, p. 773.

that, in but a small percentage of patients, the paralysis is so extensive and disabling as permanently to prevent walking, but the deformities so cripple a large percentage of patients that walking is very difficult or impossible. Paralyzed muscles should be placed and fixed in the position of rest, they should not be overstretched by the action of non-paralyzed antagonistic muscles, and should be supported in order that they may be used as their conditions will permit. Contractures begin to develop early in poliomyelitis, and protection should be given to the paralyzed muscles from the onset. Toe-drop is common, and Robinson advises that as soon as the pain has subsided sufficiently to enable the paralyzed structures to be handled without causing too much discomfort, a splint should be applied, and he recommends celluloid. So far as I know, there is nothing better for the purpose. During the International Medical Congress in London, in 1913, Batten demonstrated privately to a few of us interested in nervous diseases his method of making and applying celluloid splints, and everyone who saw them was delighted with them. Robinson expresses their advantages when he says they are simple, effective, and cheap, and enable the patient to walk while repair is progressing. They can be worn day and night with comfort, are sufficiently strong to support an adult, and yet are very light. They are readily removed so that the limb may be washed, massaged, or treated with electricity, and they can be reapplied without difficulty. They can be used for the arms, trunk or neck, and have the advantage of fitting perfectly on the part to which they are applied. The splint should vary in size according to the degree of the paralysis.

These splints are useful in the treatment of wrist-drop or toe-drop occurring from neuritis or other cause, of hemiplegia with contraction and inversion of the foot, and of contracted conditions of the hand. They will prevent deformities if applied early in the diplegias of infancy and in myelitis. Robinson calls attention to many conditions in which they are useful. They may be used in the treatment of some conditions occurring in tabes, in hypotonia with hyperextension of the knee, as they support the knee and enable the patient to walk. In Charcot's disease of the knee joint they give support, so that the patient can walk without the danger of the knee suddenly giving way, and the fixation with pressure limits the extension of the disease and the effusion which often takes place within and around the joint.

The method of making celluloid splints must be followed in detail, and as Robinson is very clear in his presentation of this method I give his directions in full.

The following processes are involved in making the splints:

1. The taking of the negative cast of the part to be splinted.
2. The making of the positive cast from the negative.
3. The building of the splint on the positive cast.

The negative cast should be applied by the physician and it is essential that it be made properly, otherwise it will be useless.

For the purpose of making the negative cast the following articles are required: A strip of lead  $\frac{3}{4}$  inch wide and 2 or 3 feet in length, some oil, a strong knife with a sharp point, and some plaster-of-Paris bandages. For this purpose the ordinary surgical bandages are really not suitable. Batten recommends a bandage made of book-muslin,  $4\frac{1}{2}$  inches wide and from 4 to 6 yards in length, loosely wound and not too heavily loaded with plaster.

The part of the body of which the cast is required is first shaved, if hairy, and then oiled. The strip of lead is oiled and adjusted to the point at which the cast is to be opened. The limb is now placed and held in the position in which it is to be fixed by the splint. As stated above, one of the most important functions performed by a splint to a disabled leg is to enable the patient to walk during the process of repair. If the leg be splinted with the knee hyperextended and the foot dorsiflexed on the tibia, walking will not be possible. The knee should be slightly flexed and the foot held exactly at right angle with the tibia. The plaster-of-Paris bandages are placed in warm water and after being squeezed out are wound round the limb, starting at the periphery and working up. The best results will be obtained if each bandage is taken continuously from one extremity of the cast to the other. If this be done the tendency of the cast to crack transversely will be much lessened. It is not necessary that the cast be very thick; four or five bandages for the entire leg of a child from six to eight years of age will be ample. The plaster will usually set in from three to five minutes. After it has set sufficiently a cut is made down to the lead. Before manipulating the cast be sure that all threads are divided, or a portion of the cast may be pulled out of place and the cast spoiled. The cut edges of the cast are now separated and the lead removed through the incision; the edges are still further separated and the cast is gently removed from the limb. In the case of the leg, if an assistant will grasp the toes and pull them forward while the cast is pushed backward little difficulty will be experienced.

After the removal of the cast the cut edges are carefully approximated and a single layer of plaster bandage wound round the cast from one end to the other, the lower opening being carefully closed with the bandage. This completes the negative cast and it is laid away to dry.

The time required for the negative cast to dry is from twelve to twenty-four hours; after it has thoroughly dried the positive cast may be made. The inner side of the negative cast is well oiled; a bamboo cane or small stick of wood of adequate strength to support the positive cast and several inches longer than the negative cast is placed down the center. The plaster of Paris is now mixed in the usual manner, poured into the cast and allowed to stand for about twelve hours. An incision



is made through the single layer of plaster bandage, the cut edges of the negative cast separated and the positive cast removed. The positive cast is now ready for the molding of the splint.

As previously stated, to build the splint on the positive cast is not a difficult process and may be done equally well by the physician or nurse. The various articles required are as follows: Stockinet or thin felt, gauze or book-muslin, solution of celluloid in acetone ("Gauvain's solution"—11 ounces of celluloid to 160 ounces of acetone, to which is added 3 ounces of calcium chlorid dissolved in 2 ounces of hot water, which should be added to the celluloid solution while still hot and well shaken), celluloid varnish (cellulose triacetate one part, acetone five parts), some leather for binding the splint and some boot-hooks.

A layer of stockinet or felt is sewn over the positive cast. Over this is placed a layer of gauze or book-muslin, so cut as to conform to the shape of the cast. On this is painted a coat of the celluloid solution; another layer of gauze is applied, on which is painted another coat of celluloid solution; this process is repeated until from twelve to eighteen coats of celluloid solution are painted on as many layers of gauze, the number varying with the age of the patient and the character of the part to be splinted. Sufficient time should be allowed between the application of the successive coats of celluloid for the previous coat to dry. A few extra layers should be applied about the knee and ankle. After the final coat has dried a layer of celluloid varnish is applied. Two incisions are now made about  $\frac{1}{2}$  inch apart and a strip of the splint removed at the point at which the opening is to be made. This permits of the removal of the positive cast from the interior of the splint. The splint is now ready to be fitted to the patient. It should fit perfectly, assuming that the cast was well made. It is usually necessary to cut away a small amount of the splint around the knee and ankle in order to facilitate its removal and reapplication.

After the fitting process is completed, the edges of the splint are bound with leather and book-hooks are inserted. It is now ready for wear. The splint should be worn next to the skin, as a stocking inside will force it out of place. It should be applied while the patient is still in bed, laced on and worn day and night, being removed twice a day for massage and passive movements. If it causes discomfort by undue pressure at any point, it should be stretched and manipulated so as to relieve the pressure. If relief cannot be obtained in this manner, some of the splint should be cut away rather than to put wool or leather inside the splint to relieve the pressure.

It is desirable that the patient be up and walking as soon as possible after the onset of the disease. Aided by the splints the average patient can walk at the end of the first month, without liability to deformity. A walking apparatus is usually necessary at first, but many patients regain strength so rapidly that they are soon able to walk alone. A

slipper or shoe should be fitted and worn over the splint, as walking is thereby made easier. Some patients with poliomyelitis recover so rapidly that the splints are no longer needed after a few months, while others may need to wear them even up to two years. If walking is not possible without support at the end of this time, a metal brace should be applied when the splints are discarded. In some cases of this disease there is never sufficient restoration to enable the patient to walk without some support. In those cases a metal brace will answer better after the splints have served their purpose.

**Fright Paralysis. Myelitis.** I have discussed the possibility of fright leading to organic disease. In a case studied by me<sup>1</sup> in 1903, a struggle with burglars was followed in two days by paresthesia of the lower limbs of sudden onset, and some days later by motor and sensory paralysis of these limbs and then death. Pus within the abdomen, extending from the rectum, and severe myelitis were found. The fright may have had no connection with the paralysis, but, on the other hand, it may have disturbed the circulation in the spinal cord and in connection with the exertion caused by the struggle have rendered the cord more liable to infection. The tendency is to attribute all acute paralysis developing immediately after fright to hysteria, and the tendency is justifiable in most cases; but there is a possibility that fright may act as an agent provocateur, in the sense of French writers, and be a cause of organic change. In many reported instances fright is only a coincidence, but, in others, it may affect the circulation in vessels already diseased. When syphilitic endarteritis has occurred in the vessels of the cord, apoplectiform myelitis has been observed frequently. Paralysis under such circumstances may develop within half an hour without any apparent exciting cause; how much more probable is paralysis, therefore, when severe emotion disturbs an impaired circulation. Blushing shows chiefly in the face and may be intense as a result of mild emotion, but the blushing is not confined to the face and may affect a large part of the body. Are the interior organs implicated in blushing? It is at least possible. A congestion of the vessels of the spinal cord from vasomotor disturbance when those vessels are diseased may cause thrombosis, and this certainly may cause paralysis, or, if the thrombosis be mild, the vitality of the affected part of the cord may be reduced and the susceptibility to toxins may be increased. One may well hesitate at the present time to accept as proved acute organic paralysis as caused by fright in cases in which the vessels are in normal condition.

**Brown-Séquard Paralysis.** Paralysis of motion on one side of the body and of sensation on the opposite side is the spinal form of hemiplegia known by the name of Brown-Séquard, but a case such as Oppen-

<sup>1</sup> Journal of the American Medical Association, October 31, 1914, p. 1546.

heim<sup>1</sup> has reported is difficult to explain. A soldier received a bayonet thrust in the right upper cervical region, and from this had paralysis of motion and of superficial and deep sensation on the same side of his body. Oppenheim dismisses the supposition of a hemorrhage extending throughout the greater part of the right posterior horn, as such a lesion is improbable and would cause flaccid, instead of spastic, paralysis. A failure of decussation of sensory fibers in the spinal cord is possible, but there is no evidence that such a failure occurs. Hysterical hemianesthesia was improbable, as the clinical picture was that of organic anesthesia. He reaches the conclusion that the point of the bayonet penetrated the left side of the cord and damaged the crossed sensory fibers. One cannot but wonder why the crossed sensory fibers in the right half of the cord escaped in so extensive a lesion as this. I would suggest, with some hesitation, that possibly the bayonet point did not extend much beyond the middle of the cord but produced a hemorrhage which destroyed crossed sensory fibers of the left half of the cord.

**Syringomyelia.** Syringomyelia usually is insidious in its onset, and yet it may have a very different course, as in a case reported by Français.<sup>2</sup> His patient at the last presentation before the Neurological Society of Paris had amyotrophy and extensive paralysis of the upper limbs and thorax, and radicular disturbance of thermic and pain sensations. The amyotrophy was of rapid onset at the age of twenty-eight years, causing slight weakness of the fingers of the right hand, and no further symptoms developed during twenty-four years. At the age of fifty-two years, paralysis, with atrophy, began in the upper limbs, and progressed so rapidly that at the end of a month the entire left upper limb was paralyzed. The reaction of degeneration was found at the end of six months in the muscles supplied by the fourth cervical to the first thoracic segments. The upper limbs were flaccid and inert three months after the onset. There was little change in the paralysis during seven years. A sudden onset in syringomyelia has been attributed to hemorrhage into the cord. When Français' patient was presented before the neurological society in 1907, she had no changes in sensation, and the development of sensory changes more than six years after muscular atrophy is unusual in syringomyelia.

**DISAPPEARANCE OF SYMPTOMS IN SYRINGOMYELIA.** That the symptoms of syringomyelia may vary from time to time has long been recognized, but that there may be a total remission of all symptoms during a period of seven years, even disappearance of disturbances of sensation and muscular atrophy and return of reflexes, as in a case reported by Stahle,<sup>3</sup> is truly noteworthy. The explanation given for this case was that hemorrhage or infiltration of fluid occurred in gliomatous tissue and was

<sup>1</sup> *Neurologisches Centralblatt*, 1915, no. 2.

<sup>2</sup> *Revue Neurologique*, June 30, 1914, p. 831.

<sup>3</sup> *Deutsche Zeitschrift für Nervenheilkunde*, vol. liii, no. 5, p. 404.



absorbed, while the gliomatous process gradually progressed and caused a return of symptoms. This case began as one of tabes, and also symptoms developed in an apoplectiform manner; both these conditions are recognized in syringomyelia.

Numerous cases of syringomyelia with improvement of motility are recorded, fewer are the cases in which sensory disturbances disappeared. Schlesinger mentions disappearance of muscular atrophy, but neither he nor anyone else gives reference to a case in which it occurred. The same may be said of a return of reflexes.

**Progressive Muscular Atrophy.** Various conditions may simulate progressive spinal muscular atrophy and the diagnosis may be difficult. Marie and Chatelin<sup>1</sup> had a patient, aged forty-nine years, who had extreme muscular atrophy of the upper limbs and scapular region, which had developed during eighteen months without pain. The face, tongue, and ocular muscles were unaffected. The gait was a little spastic, the tendon reflexes of the lower limbs were very prompt, but the condition of the reflexes of the upper limbs is not stated except that there was inversion of the radial reflex. The diagnosis of amyotrophic lateral sclerosis or syringomyelia might have been made, even though there were no sensory disturbances, or of progressive spinal muscular atrophy, but the  $x$ -rays revealed a lesion of the lower cervical vertebræ which was supposed to be an osteosarcoma. This case shows, as do many others, the great value the  $x$ -rays may have in diagnosis.

**Syphilitic Muscular Atrophy.** The cases of muscular atrophy resulting from syphilis are now sufficiently numerous to make us familiar with the symptom-complex. The examinations of the blood and cerebrospinal fluid may give evidence of syphilis, and symptoms other than those of muscular atrophy usually will be found. This is true of the case reported by Kummant.<sup>2</sup> In his case the atrophy was in the shoulder girdle, the patient had headache and vertigo, rectal and bladder symptoms, and pain. A necropsy was not obtained, but the lesion is known to be a diffuse meningomyelitis in such cases.

**FAMILY FORM OF PROGRESSIVE SPINAL MUSCULAR ATROPHY.** Dana<sup>3</sup> describes what he regards as a new form of progressive spinal myopathy. He was unable to find in the literature any account of a familial form of chronic anterior poliomyelitis always beginning in the members after middle life. He reports a case of this kind occurring at the age of fifty-three, in a family in which ten cases were known to have developed in three generations. The clinical history shows that its course is like that of a disease which destroys one group of spinal motor cells after another. It is not a slowly developing atrophy followed by paralysis, but a rather sudden paralysis followed by atrophy. The disease

<sup>1</sup> *Revue Neurologique*, June 20, 1914, p. 857.

<sup>2</sup> *Deutsche Zeitschrift für Nervenheilkunde*, vol. li, nos. 1 and 2, p. 106.

<sup>3</sup> *Journal of Nervous and Mental Disease*, November, 1914, p. 681.

progresses and the patient dies in a period of about one year. Dana saw only one case. His patient, a woman, had noticed weakness in the left thigh, beginning in January, 1913. This weakness had slowly increased, and she walked with a distinct limp and could walk only a few blocks. The left patellar reflex was absent, and reaction of degeneration was obtained in the left quadriceps femoris. The right thigh became similarly affected and weakness developed in the fingers of the left hand and soon both upper limbs became weak. Death occurred ten months after the beginning of the disease. The patient's maternal grandmother had the same disease and died from it in her forty-first year, and, following her, nine descendants were affected. No necropsy was obtained.

**Neuralgia of the Testicle from Vertebral Caries** may be extremely difficult to treat. In a case studied by Luce<sup>1</sup> the pain in the testicles was so severe that both testicles were removed, and were found, after removal, to be normal. The patient had typhoid fever immediately after this operation and was ill eight weeks. During this time testicular pain was absent, but later severe pain was felt in the scrotum, penis, and posterior and inner side of the thighs as low as the knees. The only relief the man obtained was by standing and leaning over a chair. He became wasted, lost sleep, and took morphia. Resection of nerves was without benefit. Suicide was attempted by taking a large dose of morphia and death occurred from pneumonia. The dura was found united with the lumbar vertebræ from the second to the fourth inclusive, and was thickened, and there was superficial caries only at the posterior portion of the bodies of these vertebræ. The process probably began in the second lumbar vertebra and was the cause of the severe testicular pain. The relief which appeared to be afforded by castration probably was really afforded by the confinement to bed during the typhoid fever. This case demonstrates that testicular neuralgia may be caused by irritation of the nerve roots, but it does not follow that all cases are caused in this way.

**Injuries of the Spinal Column.** Oppenheim<sup>2</sup> has been placed in charge of a hospital for soldiers with disorders of the nervous system, much in the same manner as Weir Mitchell was during the Civil War, and he also is adding to our knowledge of injuries of this system. He has reported several cases in which bullet wounds of the spinal column produced grave symptoms that were transitory. In almost all the cases the bullet was outside the vertebral column, and in some instances was so far away that it was difficult to understand how the symptoms could have been produced, and the x-rays showed no injury of the spinal column. Benda and v. Hanseemann have demonstrated by numerous preparations that bullet wounds of the vertebral column

<sup>1</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. li, nos. 3 to 6, p. 198.

<sup>2</sup> Zeitschrift für ärztliche Fortbildung, 1915, no. 4.

may be difficult to detect even at the necropsy. The bullet may not remain at its first stopping place, but may wander; it may also cause the lesion of the spinal cord by striking the vertebral column and then rebounding.

**SPINAL DECOMPRESSION TERMINATING FATALLY.** In my digest of last year I referred to a case reported by Babinski and Barré,<sup>1</sup> in which death followed a laminectomy, although the dura was not opened. This quick fatal result was a surprise to these authors. Later a microscopic examination was made and a hemorrhage was found within the cord extending from the sixth cervical segment to the first thoracic segment. The hemorrhage was just above a tumor and was partly in the region exposed at the operation. It seemed probable that this hemorrhage formed during the operation, and possibly as a result of decompression of the cord. This hemorrhage probably was the cause of death. A very similar case was referred to in the discussion by Faix. It would appear from these cases that spinal decompression may have serious results.

**Laminectomy in Meningomyelitis.** One hardly knows how to judge the extraordinary results obtained in four cases of meningomyelitis by Taylor and Stephenson<sup>2</sup> by simply decompressing the cord. I have not seen such results follow this operation as these writers fortunately obtained. In each case the cord was exposed by a unilateral laminectomy. In none of the cases was there any evidence of bone disease. The cord was very much congested and was obviously swollen, but not sufficiently to fill out the dural canal. In one case the operation had no effect whatever, and there was a steady progression of the symptoms until death occurred on the twenty-fourth day after operation. In the other three cases the improvement was prompt and remarkable when it is considered that there had been progressive disability over a period of months preceding the operation. Within four to eleven days the pains and objective sensory disturbances had largely disappeared, the sphincteric control had returned shortly after that, and motor power had reappeared in eight days in one case, although the patient had been bedridden and unable to move his legs for months. In sixteen days he was walking the length of the ward. These writers conclude:

1. Selected cases of meningomyelitis are susceptible to surgical treatment, where the findings indicate the segmental level.

2. This treatment should consist in laminectomy, free opening of the dura, and, probably, incision into the posterior columns of the cord, especially in those cases showing marked infiltration and swelling of the cord.

3. This operation, properly performed, adds very little to the jeopardy of the patient, but, on the contrary, seems to greatly diminish the period

<sup>1</sup> *Revue Neurologique*, June 15, 1914, p. 784.

<sup>2</sup> *Journal of Nervous and Mental Disease*, January, 1915, p. 1.



of convalescence and to lead to a more nearly normal return of function in the cord than is usual in these cases when treated expectantly.

**Neuritis. RECURRENT MULTIPLE NEURITIS.** This is decidedly a rare condition. Remak and Flateau in 1904 could collect only five cases of this disorder, but they overlooked two papers on the subject. Hoestermann<sup>1</sup> reports three cases under his observation, in all of which all four limbs and a part of the trunk were affected by neuritis and recovery occurred. One patient had six attacks, another two, and the third three attacks. No cause could be found in any of the cases; usually there had been some previous slight infection of the respiratory tract. There was no history of alcohol, or lead intoxication, syphilis, malaria or diabetes; conditions which may cause recurrent multiple neuritis. The explanation for this condition has not been given. Comparison has been made with recurring attacks of chorea minor, and it has been assumed that nerves once diseased are more susceptible to infection or intoxication. There has been no opportunity for study of the pathology of the affection, but the resemblance to attacks of Beri-beri suggests that recurrent multiple neuritis may be of gastro-intestinal origin.

**DYSENTERIC NEURITIS.** Multiple neuritis from dysentery has been observed by Schlesinger<sup>2</sup> in soldiers, and seems to have escaped previous detection. He is convinced that many so-called myalgias following dysentery are really from multiple neuritis, and are of common occurrence. It may be that the overexertion of the soldier's life prepares him for the intoxication polyneuritis. The dysenteric multiple neuritis affects the sensory fibers much more than the motor, and severe motor palsy was not observed.

**MUSCULAR TWITCHINGS IN NEURITIS.** Bittorf<sup>3</sup> observed a case of muscular weakness and rigidity in the upper limbs and shoulders with intense muscular tremors (fibrillary tremors) and myotonic phenomena in a man fifty-six years old. The cause was occupation neuritis or nero-myositis. In most cases with such symptoms, the lower limbs, especially the gastrocnemius muscle, more rarely the muscles of the thigh, are affected. The myotonic phenomena were slowness in the first movements, while later movements were performed more quickly. Certain symptoms of tetany were also present. The muscular twitchings in neuritis should be recognized, as there is danger that spinal cord disease may be diagnosed when the lesion really is a peripheral one.

**Injury of the Sciatic Nerve.** It is known that injury of the sciatic nerve may give symptoms only in the distribution of the external popliteal, but Oppenheim<sup>4</sup> finds that the symptoms may be confined to the distribution of the posterior tibial or the plantar branches.

<sup>1</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. li, nos. 1 and 2, p. 116.

<sup>2</sup> Medizinische Klinik, April 4, 1915, p. 383.

<sup>3</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. li, nos. 1 and 2, p. 124.

<sup>4</sup> Zeitschrift für ärztliche Fortbildung, 1915, no. 4.

Bullet wounds of the sciatic nerve may cause a predominance of sensory symptoms, and more so if the motor palsy is less complete, giving the appearance of sciatica. The only objective symptoms may be loss of Achilles reflex and slight weakness in one or more muscle groups. The pain may be intense and every noise, especially music, may be annoying, and may have a special influence on the sciatic nerve. The sole of the foot may be so hyperesthetic that the slightest touch can not be borne, and the dryness of the skin may increase the pain. Hyperidrosis may be present on the affected foot, more rarely anidrosis; frequently there is cyanosis and sometimes the skin is hot and burning. A remarkable sign is a vigorous growth of hair in the affected limb, while the growth of the nails is arrested.

**Paralysis of the Spinal Accessory Nerve.** The paralysis of this nerve is well recognized and cases of this paralysis are to be found in the literature. A. Ninian Bruce<sup>1</sup> has observed two, one of the unilateral paralysis, and one of the bilateral paralysis of the nerve. Paralysis of this nerve from injury to the nerve during the removal of tuberculous glands from the neck is well known, and the results become visible immediately after the operation, but the feature of interest in his two cases in which tuberculous glands had been removed from the neck is that the spinal accessory did not appear to have been injured at the operation. It was not until ten and fourteen years respectively afterward that the paralysis became visible, and the feeling of weakness in the shoulders had only been recently noticed. As Bruce remarks, if it be correct that the explanation consists in a subsequent involvement of the nerve in the scar tissue, it would be interesting to discover how it is that the condition has not been described more frequently.

**Sensory Fibers in the Facial Nerve.** The question as to the existence of sensory fibers in the facial nerve has been considered carefully by Leonard J. Kidd.<sup>2</sup> He believes there is no anatomical or experimental evidence of the existence of a cutaneous sensory zone of the facial nerve in any vertebrate group above the *Cyclostomata*.

Clinical studies prove, he says, that the human facial nerve has no sensory cutaneous zone on the auricle. His conclusions are radically opposed to the views advanced by J. Ramsay Hunt.

**Nerve Palsy.** Isolated paralysis of the trigeminal nerve usually is syphilitic but is very rare. In a case observed by Neiding,<sup>3</sup> no other symptoms of disease of the brain was present, but as the Wassermann of the blood was very positive, antisymphilitic treatment was given with great improvement. As there was no necropsy, the character of the nerve disorder was not determined. Interesting phenomena in this

<sup>1</sup> Review of Neurology and Psychiatry, February, 1915.

<sup>2</sup> Ibid., September, 1914, p. 393.

<sup>3</sup> Neurologisches Centralblatt, May 16, 1914, p. 615.

case were decrease in the secretion of mucus in the nose and decrease in secretion of tears on the paralyzed side.

**Trifacial Neuralgia.** Patrick's<sup>1</sup> experience in the treatment of trifacial neuralgia has been extensive, and he gives a review based on 220 cases of his own, although only 200 were tabulated for statistical purposes, they were all cases of true *tic douloureux*. Of these cases, 96 were in men, 104 in women. This would indicate, contrary to the opinion of some, that the condition is about as common in one sex as in the other. It is believed that the disorder is more common later in life. Patrick had one case in which the age of onset was seven, and another in which it was eight, in three cases the disease began at the age of seventy-five. More than half the cases (57.5 per cent.) began between forty and sixty. Forty-eight cases (24 per cent.) began under forty. Only 36 cases (16 per cent.) began over the age of sixty. Patrick does not believe the disease belongs to the involutional period, nor does he think it is different in old people. The symptomatology is the same in the young and old, the strong and the weak, in those with intercurrent disease and in those without it. Patrick has a striking way of putting statements; he says that exactly what a Frenchman means by "arthritic" is about as difficult to say as what an American means by "lithemic," "rheumatic," or an Englishman by "gouty." It is true that these terms are carelessly used, that French neurologists often speak of "arthritic" disturbances associated with nervous disorders in a way not always easy for an American to understand.

It is noteworthy that in Patrick's 220 cases only one patient had really contracted the morphin habit; some had taken this drug, but stopped when the pain was removed. The relation of *tic douloureux* to migraine, or the frequent association of the two conditions, has been noted by Putnam, Dana, and Lévy. In Patrick's cases, migraine has been by far the most frequent neurologic concomitant. Of 200 patients, 40 may be said to have had migraine, a much higher ratio than that observed in the ordinary run of patients. His cases show a preponderance of the right side, and in 6.8 per cent. both sides of the face became affected under his observation. Compared with the experience of others, as he himself says, this is a high proportion of bilateral cases.

The first division of the fifth nerve is believed to be the most frequently affected by many observers, so that Patrick's conclusion that this is an error needs attention. He says it is far the least frequently affected, and others who have studied the disease in the last few years have formed an opinion like his. In Patrick's cases, pain began in the supraorbital branch in only 8.5 per cent. of the cases, in the middle or infraorbital branch in 49 per cent., in the third or inferior dental division in 25 per cent., and in two or more branches in 7.5 per cent. Even this small

<sup>1</sup> Journal of the American Medical Association, May 16, 1914, p. 1519.



percentage for the first branch is greatly reduced if the cases are analyzed. In only two (1 per cent.) of the 200 cases, when first examined by Patrick, was the pain limited to the first branch. In some cases, while the pain is especially severe in the first branch, it really originates in the second branch, which was primarily affected but in which the pain was less severe. Migraine, pain of sinus disease, and supraorbital herpes have been confused with supraorbital neuralgia.

In 47 per cent. of the cases, pain was limited to one branch of the nerve, in 43 per cent., to two branches, and in only 10 per cent. were all three branches implicated. These figures, Patrick thinks, make it difficult to assume that the disease is located in the Gasserian ganglion. The pain he finds is of short duration, but of course may be with frequent repetition. It is like that caused by touching an exposed nerve. He has seen one case in which the single pains lasted fifteen minutes and one in which they were as long as five minutes. Pains of more than two minutes duration are very exceptional. In bad cases, patients may state that the pain continues for an hour or more; but these are instances of very rapid succession of brief paroxysms. Any pain about the face, forehead, or temple which is a steady ache, even with exacerbations, or which is continuous for half an hour or more, is not trifacial neuralgia, in Patrick's opinion.

He does not believe that extraction of teeth ever has cured the pain of tic douloureux. There are areas from which the pain may be started by slight contact, and when teeth form such an area the term "trigger teeth" is given to them. The irritable zone ("trigger zone") may be in one place and the pain in another. Touching the lower lip may cause pain in the tongue, rubbing the chin may cause pain not in the inferior maxillary distribution but in the upper lip or wing of the nose, *i. e.*, irritation of one division of the nerve may cause pain in another division. Patrick thinks it is better to attack first the branch supplying the "trigger zone". In a number of cases treatment of the middle branch alone has removed the pain in the supraorbital division. Occasionally the pain irradiates into cervical nerves and down the upper limbs, and, in a couple of instances, Patrick had the extraordinary experience that use of the upper limbs or percussion of them might start the facial pain. It would be well to study a case carefully, if such a symptom-complex as this described by Patrick existed, before the diagnosis of tic douloureux were made. One should think of irritation of the fifth nerve and upper spinal roots within the dura before he were willing to conclude he had to deal simply with tic douloureux.

Patrick demolishes long established teaching when he says the tender points of Valleix, as such, are absent in tic douloureux, present in many other affections, and are a sameiologic delusion and a diagnostic snare. Will all neurologists subscribe to this dictum. He has never seen a case with spontaneous cure, neither have I, and he knows of no definite

cure by other than surgical means. Dana believes that sometimes the disease is self-limited or tends to spontaneous cure.

I have given much attention to this paper by Patrick. He was one of the first in this country to use alcoholic injections and he has had an unusual experience with facial neuralgia.

**ALCOHOLIC INJECTIONS FOR TRIGEMINAL NEURALGIA.** Injecting a painful area with alcohol without any attempt to inject the nerve of this area is somewhat unusual. Wilfred Harris<sup>1</sup> says that in one case he injected the supraorbital nerve with alcohol with the resultant loss of pain except over a small area, the size of a shilling, at the back of the anesthetic area on the top of the head. The pain in this area ceased entirely and permanently after an injection of alcohol under the scalp of this area. In another case, attacks of pain occurred in the top of the head where a blow had been received. Strong alcohol injected twice here cured this pain. Harris' work in injection of the Gasserian ganglion is especially noteworthy. In seven patients he has been obliged to sew up the eyelids to prevent keratitis. The cure of the neuralgia by this method is certain, he says, though his first case of injection of the ganglion dates back only four years. In over sixty cases in which he injected the ganglion, in one only slight diplopia developed from weakness of the sixth nerve and lasted three months. This, he thinks, was caused by the alcohol infiltrating the outer wall of the cavernous sinus. The immediate loss of the sense of taste produced by injection at the foramen ovale is certain proof, according to Harris, that, in the large majority of persons, the taste fibers from the tongue pass along to the Gasserian ganglion by the third division, since the result is immediate and cannot therefore be caused by any vascular changes. In ten of Harris' cases (5 per cent.) the neuralgia was bilateral.

The alcoholic injections of the Gasserian ganglion has been done in this country by Camp and Byrnes.<sup>2</sup> The former has recently described his own work. He practised the operation on a number of cadavers in the anatomical laboratory, and found that there was little difficulty in making the needle pass through the foramen ovale and penetrate the Gasserian ganglion. It passes very near to important bloodvessels and they are liable to injury. If the needle points too far back it enters the jugular foramen or the foramen spinosum; if it passes too far through the foramen it will wound the cavernous sinus. Camp reports three cases treated successfully by injection of the ganglion. His suggestion that peripheral injections into the nerve trunks should be tried before the ganglion be injected should be followed. So serious a treatment should not be undertaken hastily. Heart disease or high blood-pressure, while increasing the seriousness of the situation, are not contraindications. The technique is given in Camp's paper.

<sup>1</sup> Journal of the American Medical Association, November 14, 1914.

<sup>2</sup> Medical Record, June 20, 1914, p. 1116.

One naturally wishes to know what unpleasant complications may arise. Harris does not report any untoward effect except that mentioned above. Taptas reports two cases, and in one of them complete oculomotor palsy, lasting two hours, occurred. In Camp's third case there was transient paralysis of the sixth and seventh cranial nerves on the same side, with some dizziness and nausea. Unilateral paresis in the muscles of mastication has occurred in two cases. Neuro-paralytic keratitis, so common after removal of the ganglion, has not occurred after destruction of the ganglion by injection even though the cornea be anesthetic.

The physiological effects of injection of the ganglion are interesting. There is complete analgesia in the distribution of the fifth nerve, including the mucous membranes and cornea. There is anesthesia to cotton or hair but not to touches which include pressure. There is loss of temperature sense in the same area. The preservation of pressure pain after operations on the Gasserian ganglion is worthy of further study.

Camp thinks there is good reason for believing that alcoholic injections of the Gasserian ganglion will give permanent relief from pain, and this seems to me a reasonable conclusion provided the injection has affected all parts of the ganglion.

Byrnes<sup>1</sup> has injected the Gasserian ganglion with alcohol for tic douloureux in 14 cases. In one instance the upper limit of the anesthesia involved a portion of the cornea, but only its lower half, and was represented by a line extending horizontally across the eyeball and passing through the center of the pupil. Above this line, corneal sensibility was practically normal, except for an occasional point where sensation was slightly diminished. This case would seem to show the limit of distribution of the first and second branches of the fifth nerve; it also confirms the statement that the ganglion may be injected "fractionally." Three patients had recurrences after eight, ten and twelve months respectively, and this was expected, as the injection was not entirely satisfactory. One of the cases Byrnes reports shows that facial spasm occurring in trifacial neuralgia may be of reflex origin. The patient had had an unsuccessful intracranial operation for relief of pain, but injection of the ganglion caused immediate cessation of the facial spasm and pain.

The duration of relief (November, 1914) in his 14 cases is as follows: A little more than eighteen months have elapsed since his earliest injection. During this period six patients were treated more than a year ago and are still free of pain, the longest period being eighteen months. Four patients, treated within the last twelve months of this period, have had no return. Three patients, in whom only partial

<sup>1</sup> Johns Hopkins Hospital Bulletin, January, 1915, vol. xxvi.



injections were obtained, returned for further treatment. One death occurred from carcinoma.

The pain associated with injection of the ganglion, although of wider distribution, is not greater than that experienced in making the deep neural injection; and occasionally Byrnes has found the pain so slight that he had some doubt concerning the accuracy of his technique until the characteristic sensory disturbances appeared. He has made the interesting observation that when sensation begins to return, the ability to differentiate the head and point of a pin is the last to be recovered; and it is not infrequently lost for many months after tactile sensation has returned.

**Lead Palsy.** It is well known that the methods of lead intoxication are numerous and that they may be difficult of detection. In two cases, reported by G. W. Robinson,<sup>1</sup> the poisoning was caused by cosmetics. One patient, a woman, had a slight blue line on her gums and the muscles of the shoulders and arms, and the extensors of the wrists and hands were paralyzed and wasted. The patient had no knowledge of any means by which lead could have entered her system, but on investigation it was found that for some years she had been using a cheap face powder called "Flake White." This is a lead preparation and is rubbed on the face with a moist sponge. In the second case the same preparation of lead had been used. It is important to determine, in a suspected case of lead poisoning in a woman, whether this or some similar preparation has been employed. I have already mentioned in this article an extraordinary case of lead poisoning recorded by Thomas and Blackfan.

**DOUBLE WRIST-DROP FROM OTHER CAUSE THAN LEAD.** It is a mistake to conclude because a person has bilateral wrist-drop that he necessarily has lead palsy, although this form of paralysis is common from lead intoxication. Péliissier and Borel<sup>2</sup> have observed a young man with bilateral paralysis of the muscles supplied by the posterior interosseous nerve. The long supinator escaped. The paralysis was more intense on the left side, but the extension of the index and little fingers was still possible. The paralysis implicated the interosseous and hypothenar muscles of the left side, the thenar muscles of both sides, the muscles of the forearms and especially the left triceps. Reaction of degeneration was present. No cause for lead poisoning could be detected. As this form of palsy has resulted from syphilis (Massary, Baudouin) the possibility of syphilis was considered, but a diagnosis of this kind could not be accepted because of lumbar puncture with negative findings and absence of a positive Wassermann reaction. The paralysis was attributed to poliomyelitis. The man had acute poliomyelitis at the age of three months, with left hemiplegia, which later disappeared. It was possible that the old lesion of the anterior horns of the spinal cord became active again in early adult life.

<sup>1</sup> Journal of the American Medical Association, March 6, 1915.

<sup>2</sup> Revue Neurologique, June 30, 1914, p. 861.

**PARALYSIS OF EXTERNAL OCULAR MUSCLES FROM LEAD.** E. M. Williams<sup>1</sup> has seen two cases of paralysis of ocular muscles from lead intoxication. This form of palsy certainly is rare. In one of his cases, internal rectus palsy occurred, with bilateral ptosis and partial double wrist-drop. The patient was a painter. In Williams' second case there was paralysis of the right external rectus muscle and widespread and intense trophic changes in the muscles. The paralysis of the external rectus was partial, but was sufficient to cause double vision when the man worked in a dim light. Williams says he has had several patients with slight or partial ocular paralysis in whom double vision occurred only in dim light. He thinks it may be due to the extra impulses necessary to accommodation in a poor light, causing a proportional overworking of the healthier muscles.

**Periodic Ocular Palsy.** In the case of this peculiar disorder described by Crouzon and Chatelin,<sup>2</sup> four attacks occurred within two years. The headache occurred on the same side as the ocular palsy, and in the first attack the sixth nerve was paralyzed. This nerve is seldom paralyzed alone in periodic ocular palsy. In the second attack the third nerve was paralyzed, and in the fourth attack a paralysis of the sixth nerve was followed in a few days by paralysis of the third nerve without a repetition of the headache. No occurrence of such successive ocular palsies is known apparently. The etiology of this disorder is obscure.

**Pressure Palsies.** An explanation that Kurt Singer<sup>3</sup> offers for the escape of the sensory fibers in musculospiral palsy from pressure is that the pressure usually is exerted below the point at which the sensory fibers leave the nerve, therefore at a part of the nerve where it contains only motor fibers. There must be a tendency in certain individuals to pressure palsy before pressure can bring about the palsy, as some individuals, even though their nerves are pressed upon in sleep, show no palsy. Alcohol frequently renders the nerves more susceptible to pressure, and Singer thinks a single severe intoxication is sufficient. Too sudden contraction of the triceps may cause musculospiral palsy. This palsy is rare among women, not only because they use less alcohol than men, but also because the nerve when exposed is better covered with fat in women. In 91 cases of pressure palsy in sleep collected by Kramer, only 10 were in women.

In pressure palsy of the ulnar nerve, the pressure is not always exerted at the elbow, but may be in the axilla from the head of the humerus when the limb is elevated and the brachial plexus is pressed upon. In such a condition as this, the median nerve is likely to be implicated as well as the ulnar. Plexus palsy also may be caused by sleeping with the arm beneath the head.

<sup>1</sup> Journal of the American Medical Association, August 1, 1914, p. 403.

<sup>2</sup> Revue Neurologique, May 30, 1914, p. 734.

<sup>3</sup> Monatsschrift für Psychiatrie und Neurologie, September, 1914, p. 236.

**Paralysis of the Ungual Phalanx of the Thumb.** Extensor paralysis of the distal phalanx of the thumb from spontaneous rupture of the tendon of the extensor pollicis longus, as described by Hunt,<sup>1</sup> is rare, as there seems to be no similar case reported in American literature. Most of the observations are of German origin and are to be found chiefly in the medical reports of the German army. Hunt's patient, a man, inserted his right hand in the trousers pocket searching for some object, twisting and turning the hand about as one does when trying to explore its various angles. While doing this he was suddenly seized with a sharp and very severe pain over the posterior surface of the wrist on its radial side. On removing his hand from the pocket he was unable to extend the end phalanx of the thumb, while flexion could be easily performed. He had great pain over the dorsal surface of the hand and first metacarpal bone which continued for several days, and this region was very sore and sensitive to the touch for a fortnight. Since the accident the man was unable to pursue his calling of a tailor, as he could not use the needle. In addition to pain and tenderness, there was also some swelling in the same region.

German military surgeons have recognized this condition as drummer's paralysis, and von Wurthenau collected the reports of 62 cases. The condition, as Hunt says, is the result of a chronic tenosynovitis induced by a peculiar method of holding and using the left drumstick, which causes mechanical irritation of the long extensor tendon of the thumb as it emerges from its special compartment in the posterior annular ligament of the wrist. This in time causes pathological alterations in the tendon and its sheath, and eventually rupture takes place either during a paroxysm of drumming or more rarely spontaneously. If the tendon be ruptured, a tender, movable nodule may be palpable just below the annular ligament which corresponds to the distal stump of the severed tendon. The usual seat of rupture is just after the emergence of the tendon from beneath the posterior annular ligament.

**Aplasia Axialis Extracorticalis Congenita.** In 1885, Pelizaeus described a family in which a peculiar disease had existed in five members in the children and grandchildren of one pair; three children were dead and two were living at the time of publication. All those affected were males, the disease being transmitted by unaffected females. The symptoms resembled those seen in disseminated sclerosis, and were tremor of the head, nystagmus, ataxia, slow speech, and spastic paralysis of the lower extremities. There was mental impairment, more apparent than real. Sensation and control of the sphincters were normal. The disease was present in earliest infancy, and was not progressive, the patients dying of some intercurrent disease between the ages of twenty and thirty.

<sup>1</sup> Journal of the American Medical Association, April 3, 1915, p. 1138.



Merzbacher, in 1908, studied this family and found twelve instances of the disease, one of which he was able to investigate pathologically and which he reported under the title of *aplasia axialis extracorticalis congenita*. The disease was observed in four generations, fourteen members of the family were known to be affected; it was always transmitted by healthy females, and males were more affected than females. The clinical characters of the disease are as follows:

It begins in the first months of life and makes rapid progress until the sixth year, then is more slowly progressive. When it is fully developed there are nystagmus, slow speech, incoördination, intention tremor, paresis of the back, pelvic and abdominal muscles, spastic paralysis of the lower limbs, increase of patellar reflexes, etc.

Batten and Wilkinson<sup>1</sup> refer to the literature in reporting a family in which the disease occurred. Six males were affected in two generations. There is much in the symptom-complex to suggest the occurrence of multiple sclerosis in several members of the same family.

**Pseudohypertrophic Muscular Paralysis.** A clinical study of this form of muscular dystrophy has led Sala<sup>2</sup> to the conclusion that the hereditary factor is overestimated, as is also the occurrence of the disease in more than one member of a family. It is true, however, that males are more liable to the disease than are females. The electrical results he obtained are important, for he found qualitative as well as quantitative changes; slow contraction and reversal of the formula, and this in an early stage of the disease in some cases.

**Unilateral Trophedema of Limbs.** Pershing<sup>3</sup> reports a clinical case of this rare disorder, described by Meige and others. Meige defines the condition as "an edema which is chronic, pale, firm, painless, of segmentary distribution, unilateral or bilateral, isolated or familial and hereditary, sometimes, perhaps also congenital."

The cause is not known. The onset has followed one of the infectious fevers, such as typhoid, measles, smallpox or scarlet fever; but this may have been only coincidence. It has been regarded as caused by spinal cord disease, but such a relation is questionable. It has been attributed to thyroid insufficiency but thyroid medication has not been effective. Pershing thinks the only treatment that has any certain effect is the application of elastic bandages. This is palliative, but in Pershing's patient the foot on the affected side was only a little larger than that on the other side, because of the restraining pressure of the shoe.

**Congenital Muscular Hyperplasia.** The partial congenital enlargement of a limb is obscure in its origin. In Rossi's<sup>4</sup> case, a child, four

<sup>1</sup> Brain, 1914, vol. xxxvi, p. 341.

<sup>2</sup> Archiv für Psychiatrie, vol. lv, no. 2, p. 389.

<sup>3</sup> Journal of Nervous Mental Disease, February, 1915, p. 65.

<sup>4</sup> Deutsche Zeitschrift für Nervenheilkunde, vol. lii, nos. 5 and 6, p. 311.

months old, had the right upper limb much larger than the left, and the muscles of this limb were better developed. A piece of muscle excised showed that the condition was a true hyperplasia; there was an increase of muscular tissue, and the case therefore differs from many reported in the literature. The writer is unable to give any satisfactory explanation why the muscles of one limb should develop out of proportion to the rest of the body.

**Acquired Hypertrophy.** Acquired hypertrophy of a limb is difficult to explain under some circumstances, as shown by Thomas and Chauffour.<sup>1</sup> Partial hypertrophy of a limb has been observed in syringomyelia, and hypertrophy is seen with athetosis and as a result of typhoid fever. A case reported by Lesage has much in common with that reported by Thomas and Chauffour. In both, the hypertrophy predominated in the calf, the skin was normal, the subcutaneous fat was not increased, temperature was higher on the side of the hypertrophy, and the hypertrophied muscles tired sooner after exercise. In the case of Thomas and Chauffour, there was diminution of the electric reactions and some slowing of the contractions, and the child was tuberculous. Deep palpation of the lower abdominal wall revealed enlarged glands along the course of the vessels, and these were supposed to irritate and compress the vessels and nerves, and to bring about the hypertrophy, but usually compression does not cause hypertrophy.

**Pernicious Anemia.** CHANGES IN THE BRAIN IN PERNICIOUS ANEMIA. It is only recently that alteration of the brain has been found in pernicious or fatal anemia in addition to the well known alteration of the spinal cord. Schröder,<sup>2</sup> during several years past, has observed small foci, varying in number in different cases, in the white matter of the cerebrum. They are very different histologically from the foci in the spinal cord and are most numerous at the union of white matter with the cortex, but are not found far within the cortex. They have not been found within the cerebellum. The foci are very small, usually distinct from one another, and are intimately related to the bloodvessels, so that a capillary is found at their center.

**PERNICIOUS ANEMIA TREATED BY SPLEEN EXTRACT.** In an abstract of a Russian paper by Mikhailoff,<sup>3</sup> excellent results from the treatment of pernicious anemia by spleen extract are reported. Eighteen rabbits were made to develop severe anemia by the injection of phenylhydrazin for four to five days. Ten were left without treatment, and eight of these died by the third to the fifth day. The other eight rabbits were treated with spleen extract, and in all the blood condition became almost normal. This treatment was then used in a very severe case of pernicious anemia in a man, aged twenty-six. About 2.5 c.c. of a 2

<sup>1</sup> *Revue Neurologique*, May 30, 1914, p. 710.

<sup>2</sup> *Monatsschrift für Psychiatrie und Neurologie*, June, 1914, p. 543.

<sup>3</sup> *Journal of the American Medical Association*, December 5, 1914, p. 2081.

per cent. solution of an extract of spleen substance was injected, and improvement was noticed after the seventh injection, and a complete cure was obtained after the fiftieth injection. Six months later the hemoglobin rate was 95 per cent.; the reds numbered 5,125,000; the white 6800; the color index was 0.9. Equally good results were obtained in two other cases. The explanation is offered that the presence of hormones from the spleen extract stimulated the functioning of the blood making organs.

It is a pity that this paper is not published in a more accessible journal. The neurologist sees such grave results in the nervous system from pernicious anemia that he must earnestly hope this treatment with spleen extract will prove effective.

**PERNICIOUS ANEMIA TREATED WITH SALVARSAN.** We are accustomed to using arsenic in the treatment of anemia, and yet many possibly are ignorant of the fact that it was Byrom Bramwell,<sup>1</sup> who introduced this treatment for pernicious anemia in 1875. He is therefore especially entitled to be heard when he relates his experiences, as he has recently done. He has given Fowler's solution in 110 cases of pernicious anemia, and has treated 21 cases with salvarsan or neosalvarsan. The impression made on him by the comparative results of these two forms of treatment is decidedly in favor of the salvarsan. Of the 110 cases treated by arsenic given by the mouth in the form of Fowler's solution, in 36 cases (32.7 per cent.), there was no improvement; in 22 cases (20 per cent.), there was slight improvement; in 40 cases (34.5 per cent.), there was marked improvement; and in 14 cases (12.7 per cent.) there was complete (temporary?) recovery.

Of the 21 cases treated by salvarsan or neosalvarsan, in 6 (28.5 per cent.), there was no improvement; in 3 (14.2 per cent.), there was slight improvement; in 5 (23.8 per cent.), there was marked improvement; and in 7 (33.3 per cent.), there was complete (temporary?) recovery. He has preferred the intramuscular injection of salvarsan, and in his more recent cases has used neosalvarsan, but he doubts whether neosalvarsan is so effective in the treatment of pernicious anemia as is salvarsan. In none of the cases was there any reason to suspect previous syphilis. Salvarsan or neosalvarsan does not seem to produce peripheral neuritis, and this is a great advantage. Since Bramwell advised the administration of salvarsan for pernicious anemia, he has received a number of communications from different physicians. In some cases striking beneficial results have been obtained, in others there has been no improvement.

**Paralysis Agitans and Nervous Syphilis.** Quite a number of cases have been described in the literature in which both the symptoms of paralysis agitans and tabes were present, and usually these have been

<sup>1</sup> British Medical Journal, March 6, 1915, p. 406.



regarded as the exhibition of two distinct diseases in the same person. Camp<sup>1</sup> does not accept this opinion, and, in reporting a case in which symptoms of the two diseases were present, came to the conclusion that a typical Parkinson syndrome may exist with, and be caused by, a syphilitic lesion in the central nervous system, but this is not the etiology of the disease paralysis agitans, and, furthermore, that any lesions in the central nervous system causing a Parkinson syndrome is likely an irritative rather than a destructive one.

**Antitoxin Treatment of Tetanus.** Two hundred and twenty-five cases of tetanus have been analyzed by E. E. Irons,<sup>2</sup> with the object of ascertaining what results are obtained in this country with antitetanic serum in the treatment of tetanus, and whether the failures in some cases may not be ascribed to the faulty and inefficient method of giving the serum. Statistical studies of case reports collected from the literature are liable to be erroneous. With one or two exceptions, none of the cases used by Irons have been reported, and all the reports were obtained by correspondence from hospital or private records.

Irons concludes, from a study of his statistics, that the mortality of tetanus treated by tetanus antitoxin is about 20 per cent. lower than the average mortality of tetanus treated without serum; and that the mortality of cases treated by efficient methods and adequate dose is considerably lower than that of cases receiving small doses subcutaneously.

The prophylactic value of tetanus antitoxin needs no argument for its support. It should be more generally recognized, he thinks, that tetanus antitoxin properly used may save the life of a patient in whom tetanus has already developed, and the treatment should be employed in every case at the earliest possible moment. As he puts it, every hour lost before giving of the antitoxin decreases the chance of saving life. By no means will every patient recover, but certainly more can be saved than have been in the past five years, and there is every reason to believe that, with a proper use of antitoxin, a mortality considerably lower than that of the present will be obtained.

It is important that the full effect of the antitoxin be obtained immediately, and this may be accomplished by giving 3000 units intraspinally, and from 10,000 to 20,000 units intravenously at the earliest possible moment after the symptoms of tetanus appear. On the following day the intraspinal injection of 3000 units may be repeated. The blood remains strongly antitoxic for several days. On the fourth or fifth day, 10,000 units should be given subcutaneously to maintain the antitoxin content of the blood.

Irons believes it is doubtful whether the enormous doses given in some cases over periods of many days are any more effective than the

<sup>1</sup> Journal of Nervous and Mental Disease, August, 1914, p. 489.

<sup>2</sup> Journal of the American Medical Association, June 27, 1914, p. 2025.

more limited dosage outlined above. If only a small amount of antitoxin is available, it should be given intraspinally. The use of antitoxin does not replace other recognized non-specific methods of treatment. Surgical treatment of the site of infection should be instituted at once. The patient should be put in bed in a quiet, darkened room, and should receive sufficient sedatives to control convulsions, but the danger of poisoning should be remembered.

**Treatment of Epilepsy by Crotalin.** For the purpose of determining the effect of crotalin on epilepsy, a group of patients having idiopathic epilepsy was selected for three months' treatment at the Oakbourne Epileptic Colony. These patients were under the care of N. S. Yawger<sup>1</sup> during the test. Six with idiopathic epilepsy were chosen. All but one were given an intramuscular injection of crotalin once a week for three months. At first  $\frac{1}{200}$  of a grain was used, and the amount was gradually increased. As a distinct psychic influence is often observed in the treatment of epileptics, the purpose of the injections was kept as much as possible from the knowledge of the patients. The results were as follows: Two patients were uninfluenced; two were worse during the treatment; one, early in the course, developed such intolerant toxic symptoms that further experimentation was unjustified, and the last patient died two and a half months after treatment. While the death was not attributed to crotalin, the patient's disease certainly was not benefited by crotalin.

**Significance of Mild Findings in the Cerebrospinal Fluid.**—How much importance shall be placed on certain abnormal findings obtained by lumbar puncture is a question often difficult to answer. Sicard and Cambessédès<sup>2</sup> have found the cerebrospinal fluid usually normal, as obtained by lumbar puncture, in cases of simple or ophthalmic migraine. Migraine, with abnormal findings in the cerebrospinal fluid may be the first indication, they believe, of meningeal or meningocortical lesions, and may precede other symptoms several weeks or even several months.

Babonneix remarked in the discussion of this subject that in the so-called essential migraine there are often other symptoms indicating meningeal disorder, such as photophobia, mydriasis or myopia, stiffness of the neck or limbs, vomiting, bradycardia. Simple or essential migraine may follow severe lesions of the brain, as ventricular hemorrhage or cerebral tumor.

Claude regarded hypertension of the cerebrospinal fluid, hyperalbuminosis and lymphocytosis, or any one of these when very pronounced, as indicating an organic disorder. It is common to find persons with very little impairment of general health who complain of attacks of headache with nausea and vomiting, or who have a con-

<sup>1</sup> Journal of the American Medical Association, May 16, 1914, p. 1533.

<sup>2</sup> Revue Neurologique, June 30, 1914, p. 835.

tinuous disturbance of this kind. They may have been treated a long time for migraine. If a lumbar puncture be made, the pressure may amount to 20 or 30 c.c. of water and there may be a little excess of albumin, or, if the pressure be normal, there may be some lymphocytes. It is difficult to come to a satisfactory decision in such cases, and it is unwise to give a grave diagnosis. Claude has observed several cases of this type in which no serious disease developed. The condition evidently was temporary hypertension of the cerebrospinal fluid.

**Psychalgia.** There is nothing more difficult to treat than the pain that occurs in certain cases where no satisfactory cause can be found for it; indeed, it seems as though a pain habit might be established. Such a case is that reported by Sicard and Haguénau.<sup>1</sup> The pain appeared almost immediately after the removal of a benign adenoma from the left breast. The pain was in the region of the operation, was shooting and severe, and prevented sleep. Nothing gave relief and yet metastasis could not be discovered, and the condition was called *cenestopathy*. This is a term originated by Dupré for hallucinations of sensations corresponding to the hallucinations of the special senses, and relates more to paresthesia than to pain, but pain hallucinations should be included; and then the term *cenestalgia* might be employed. One might ask why *psychalgia* should not be used, as it is a term already more or less familiar to many.

Medical and surgical treatment not only may fail to moderate these mental pains, but by "fixing" them may make them worse. In the case mentioned above, resection of the fourth to the eighth intercostal nerves, inclusive, two months after the operation caused no impairment of objective tactile sensation and only slight impairment of pain and temperature sensations, from which it was concluded that *cenestalgic* persons possess a special exaggeration of cutaneous sensation, so great as to permit a recovery of sensation after an extensive resection of nerves which in a normal person would cause a persistent loss of sensation. This opinion is difficult to accept, and this difficulty was well expressed by Dejerine when he stated in the discussion that he could not understand how a neuropathic state could hasten the regeneration of resected peripheral nerves.

**Chorea.** Hertz<sup>2</sup> states it is universally agreed that chorea is an organic disease on account of its association with rheumatic fever and its organic complications, such as endocarditis and pericarditis. The anatomical changes that have been found are unimportant. He uses Babinski's sign known as "the combined movement of trunk and pelvis" to show the organic nature of chorea. When a normal individual, lying on his back, with his arms folded and his legs widely separated, attempts to sit up, both legs rise equally into the air; on falling back to the bed,

<sup>1</sup> *Revue Neurologique*, May 30, 1914, p. 707.

<sup>2</sup> *Review of Neurology and Psychiatry*, June, 1914, p. 250.



the legs again rise. In organic hemiplegia the affected leg always rises higher than the other, but in hysterical hemiplegia the paralyzed leg remains flat on the bed, even though some muscles are brought into vigorous action when this occurs. Hertz has tested this sign in seven cases of hemichorea. The leg on the affected side without exception rose higher than the other, although the plantar reflex was flexor and the cutaneous and tendon reflexes of the two sides were equal.

**Macrogenitosomia Præcox.** The case of macrogenitosomia præcox reported by Collin and Heuyer<sup>1</sup> represents a strange disease. A boy, who had always been unusually large for his age, at nine years of age increased rapidly in size, put on fat and the condition of puberty developed. He presented at eleven years of age the appearance of a boy of sixteen or seventeen years, but was very backward mentally. The x-rays revealed no anomaly of the skull. The condition was believed to be the macrogenitosomia præcox, which Pellizi described in 1910, and which has been described by other authors. It is not precocious gigantism, as in the type of Launois and Roy the development of the genital organs is deficient, the enlargement is chiefly in the distal segments of the limbs, and the epiphyseal cartilages persist. In the case described above, the growth was general, the genital organs were fully developed, and the epiphyseal cartilages showed precocious calcification. The boy presented no appearance of acromegaly. Gigantism does not occur in cases such as this because of early calcification of the epiphyseal cartilages, and death has occurred early in all the cases, before the twelfth year, and therefore before development would be completed. The symptoms usually have appeared before the seventh year, from the second to the sixth year. In four, of the seven typical cases of macrogenitosomia præcox, a tumor of the pineal gland has been found, and the same was found in two atypical cases. Some writers believe there is an unusual mental development in this condition that it certainly is not present in all cases.

**Extension of Zone of Irritation of the Babinski Reflex.** It is well to know that occasionally when the reflex activity is increased we may obtain the Babinski reflex from irritation of almost any part of the lower limb or trunk. I had a case of this kind some years ago but did not report it. Another case is in my service at the Philadelphia General Hospital and has been reported by Yawger. In this case Pott's disease has caused paralysis and exaggeration of the tendon reflexes of the lower limbs. Irritation of the lower limbs anywhere, or of the trunk as high as the umbilicus, produces a distinct Babinski reflex in either foot. Guillain and Dubois<sup>2</sup> in April, 1914, presented a case of infantile hemiplegia where irritation of the skin anywhere in the hemiplegic side produced extension of the big toe. They recently have described a

<sup>1</sup> *Revue Neurologique*, May 30, 1914, p. 729.

<sup>2</sup> *Ibid.*, p. 714.

similar case; one in which athetosis was associated with this extensive reflex zone of the Babinski reflex. A pin-prick on the left side in the plantar surface produced a Babinski only on this side, but irritation anywhere above the tibiotarsal articulation produced a bilateral Babinski. Irritation of the right lower limb anywhere produced a Babinski sign only on the right side. In both cases the lesion was congenital or developed in early childhood, and these authors think that this extension of the zone of irritation of the Babinski reflex may depend upon the early period at which the lesion developed; however, I have seen it where it had developed in an adult.

**Reinforcement of Reflexes.** Walter B. Swift<sup>1</sup> recommends the reinforcement of the tendon reflexes in cases in which they are difficult to obtain by the electrical current. It makes little difference in which direction the current passes so long as it does pass the mechanism that causes the reflex act; it also makes little difference as to whether the current is faradic or galvanic. It should be as strong as possible to the point of causing pain, but pain through muscle contractions interferes with elicitation of the reflexes. The electrical irritation should be a useful method of reinforcement.

**Conduction of Pain Sensation.** Some very interesting and important investigations regarding the conduction of pain sensation in the spinal cord have been carried on by Karplus and Kreidl.<sup>2</sup> They found that in cats immediately after simultaneous division of both halves of the cord at different levels, pain irritation was transmitted through the cord to the brain. The pain sensation was not of feeble intensity. The animals operated upon reacted without any delay in the recognition of pain and sometimes to such feeble irritation that the reaction did not appear to be reduced in important degree. The theory that pain conduction is through the long tracts of the white substance of the same and opposite sides is not reconcilable with the results of their experiments. The gray substance, they believe, must have an important role in the conduction of pain impressions. The results obtained by these investigators could not be regarded as indicating a substitution of one function for another, as prompt reaction to pain was obtained immediately after the operation.

**Spasticity.** The tonicity of muscles, Mills<sup>3</sup> believes, is an attribute of the cerebral cortex, not of the cerebellum. Its cerebral representation is distinct from the motor projection system, and is in the mid-frontal region. This area he calls the cortical tonectic zone. Forced laughter and forced crying are phenomena of abnormal tonicity. The corpus striatum, he holds, functions like a region of the cerebral cortex, and when the cortical tonectic centres are released by destructive

<sup>1</sup> Review of Neurology and Psychiatry, December, 1914, p. 507.

<sup>2</sup> Archiv für die ges. Physiologie, vol. clviii.

<sup>3</sup> Neurologisches Centralblatt, 1914, No. 24.

lesions from their connections with the corpus striatum, the tone stimuli probably overflow by gyral associating tracts into contiguous and correlated motor centres. He believes he is enabled to distinguish a syndrome of lesion of the caudate nucleus, consisting of hyper-tonicity, and tonectic paresis, as exhibited especially in the phenomena of involuntary painful emotional expression, and various symptoms referable to the cortico-autonomic nervous system, vasomotor and secretory affections, disturbances of temperature, pulse, respiration, and of various forms of glandular activity.



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